Record of Decision

Operable Unit 4 Bound Brook

Cornell-Dubilier Electronics, Inc. Site

South Plainfield Borough, Middlesex County, New Jersey

United States Environmental Protection Agency

Region 2

May 2015

DECLARATION STATEMENT
RECORD OF DECISION

SITE NAME AND LOCATION

Cornell-Dubilier Electronics, Inc., Site (EPA ID#NJD981557879)
Borough of South Plainfield, Middlesex County, New Jersey
Operable Unit 4

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedy to address the contaminated sediments, floodplain soils and groundwater within the Bound Brook corridor associated with previous operations at the Cornell-Dubilier Electronics, Inc. (CDE), Superfund site, in South Plainfield, Middlesex County, New Jersey. The selected remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record established for this site.

The New Jersey Department of Environmental Protection (NJDEP) concurs with the selected remedy.

ASSESSMENT OF THE SITE

The remedy selected in the Record of Decision (ROD) is necessary to protect public health or the environment from actual or threatened releases of hazardous substances from the site into the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedy described in this document represents the fourth remedial phase for the site, designated as operable unit 4 (OU4). It addresses the contaminated sediments, floodplain soils and groundwater within the Bound Brook corridor. The components of the selected remedy include:

- excavation of floodplain soils and Bound Brook sediments containing PCBs over 1 milligram per kilogram (mg/kg) with off-site disposal;
- after soil and sediment removal to 1 mg/kg, monitored natural recovery of Bound Brook sediments to a remediation goal of 0.25 mg/kg PCBs;

- excavation of an area adjacent to the former CDE facility where buried PCB-contaminated capacitors are present, followed by off-site disposal;
- hydraulic containment of groundwater that discharges to Bound Brook, to prevent the release of groundwater contaminants to surface water;
- relocation of a 36-inch waterline that traverses the former CDE facility to protect the integrity of the facility remedy and future remedies implemented in Bound Brook; and,
- institutional controls including continuation of fish consumption advisory already established by NJDEP, signage to remind anglers and other recreational users of the presence of PCBs in sediments and fish and the need to take preventative measures, and inclusion of the area of groundwater discharging to Bound Brook adjacent to the CDE facility in the Classification Exception Area already required for the OU3 remedy.

In addition, the 2012 ROD evaluated alternatives for restoration of groundwater to meet Applicable or Relevant and Appropriate Requirements (ARARs) and concluded that no practicable alternatives could be implemented. Consequently, EPA invoked an ARAR waiver for the groundwater at the site due to technical impracticability (TI). However, EPA deferred a TI determination for the small area of the groundwater plume that discharges into Bound Brook. This area was further evaluated as part of this remedy selection process for Bound Brook. As a result, EPA has concluded that the groundwater ARAR waiver should be expanded to include the area of Bound Brook deferred in the 2012 ROD.

DECLARATION OF STATUTORY DETERMINATIONS

Part 1: Statutory Requirements

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial actions (unless justified by a waiver), is cost effective, and utilizes permanent solutions and treatment technologies to the maximum extent practicable.

Part 2: Statutory Preference for Treatment

The selected remedy satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment).

Part 3: Five-Year Review Requirements

The selected remedy will result in hazardous substances, pollutants, or contaminants remaining above levels in sediments, floodplain soils and groundwater that allow for unlimited use and unrestricted exposure. Therefore, a statutory five-year review will be conducted five years after the initiation of the remedial action to ensure the remedy continues to provide adequate protection of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record for the site.

- Chemicals of concern and their respective concentrations may be found in the “Site Characteristics” section.

- Baseline risk represented by the chemicals of concern may be found in the “Summary of Site Risks” section.

- A discussion of remediation goals may be found in the “Remedial Action Objectives” section.

- A discussion of source materials constituting principal threats may be found in the “Principal Threat Waste” section.

- Current and reasonably anticipated future land use assumptions are discussed in the “Current and Potential Future Site and Resource Uses” section.

- A discussion of potential uses for groundwater that will be available at the site as a result of the selected remedy may be found in the “Remedial Action Objectives” section.

- Estimated capital, annual operation and maintenance (O&M) and total present worth costs are discussed in the “Description of Alternatives” section.

- Key factors that led to selecting the remedy (i.e., how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

Walter E. Mugdan, Director
Emergency & Remedial Response Division
EPA - Region 2

May 8, 2015
Date

Decision Summary

Operable Unit 4 Bound Brook

Cornell-Dubilier Electronics, Inc. Site

South Plainfield Borough, Middlesex County, New Jersey

United States Environmental Protection Agency

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May 2015

TABLE OF CONTENTS

PAGE

SITE NAME, LOCATION AND BRIEF DESCRIPTION

Cornell-Dubilier Electronics, Inc. (CDE), operated a facility at a 26-acre property located at 333 Hamilton Boulevard, South Plainfield, New Jersey. Electronic parts and components including capacitors containing polychlorinated biphenyls (PCBs) were manufactured at the former CDE facility. During site operations, the company released and buried material contaminated with PCBs and chlorinated volatile organic compounds (VOCs), primarily trichloroethylene (TCE), which resulted in contamination of the surrounding site soils. EPA also detected PCBs and VOCs in the groundwater and PCBs on nearby residential, commercial and municipal properties. In addition, PCBs and VOCs were also found in the surface water and sediments of Bound Brook and its downstream floodplain soils.

To effectively manage site complexities, the CDE site was divided into four operable units (OUs), shown on Figure 1. EPA signed a Record of Decision (ROD) in 2003 for operable unit one (OU1) that addressed residential, commercial, and municipal properties in the vicinity of the former CDE facility. In 2004, EPA signed a ROD for operable unit two (OU2) that addressed contaminated soils and buildings at the former CDE facility. In 2012, EPA signed a ROD for operable unit three (OU3) addressing site-related contaminated groundwater. The final action for the CDE site is referred to as operable unit four (OU4). For OU4, which is the subject of this Decision Document, EPA performed a 10-mile remedial investigation (RI) of Bound Brook. Bound Brook, located in Middlesex County, New Jersey, is a secondary tributary of the Raritan River. The headwaters of Bound Brook originate in areas of Edison Township. Bound Brook flows westerly through the Borough of South Plainfield and into Piscataway Township, where the water is dammed to form New Market Pond, and then flows through Middlesex Borough to the confluence with Green Brook. Green Brook flows to the Raritan River.

The RI determined that site-related contamination is found within the Bound Brook corridor. The OU4 RI determined the nature and extent of contamination in the brook channel, adjacent floodplain soils, and tributaries. The OU4 RI also focused on the portion of the contaminated groundwater that was not addressed by the OU3 remedy (i.e., groundwater that discharges to Bound Brook).

The CDE site is on the U.S. Environmental Protection Agency’s (EPA’s) National Priorities List (NPL). EPA is the lead agency, and the New Jersey Department of Environmental Protection (NJDEP) is the support agency.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Spicer Manufacturing Company manufactured universal joints and other automobile components at 333 Hamilton Boulevard from 1912 to 1929. CDE then manufactured electronic components at the property including PCB-containing capacitors, from 1936 to 1962. Much of the PCB-contaminated debris and soil found on site contained Aroclor 1254, suggesting that this was the primary PCB product during much of the company's operations, although Aroclor 1242 was also detected. (“Aroclor” is a PCB trade name that refers to specific chlorinated biphenyl mixtures.) In addition to PCBs, chlorinated organic degreasing solvents, primarily TCE, were used in the manufacturing process. As a result, the primary site-related chemicals of concern are PCB compounds and VOCs.

After CDE departed from the property in 1962, the property was rented to commercial and light industrial tenants. The property was occupied until EPA began to implement the OU2 remedy in 2006, which included the relocation of tenants and demolition of the buildings.

In the mid-1980s, NJDEP investigated the presence of tetrachloroethylene (PCE), TCE, and other VOCs in residential wells on Pitt Street in South Plainfield to the south and west of the former CDE facility. NJDEP identified the former CDE facility, then known as the Hamilton Industrial Park, as a potential source of this contamination, but investigations at the time were inconclusive.

Follow-up testing by NJDEP in the early 1990s led to a request that EPA consider the site for potential emergency response actions and, between 1994 and 1996, EPA conducted sampling at CDE and found elevated concentrations of PCBs, VOCs and inorganics in soil, surface water and sediment at the facility. In March 1997, EPA ordered the property owner, D.S.C. of Newark Enterprises, Inc. (DSC), to perform a removal action to mitigate contaminated soil and surface water runoff from the facility. In response, DSC paved driveways and parking areas at the former CDE facility, installed drainage controls and a security fence. The former CDE site was placed on the NPL in July 1998.

OU1 Remedy and Remedial Action

Investigations in the late 1990s found extensive contamination within Bound Brook and PCB contamination on several properties near the facility. EPA's investigations found PCB-contaminated soil and interior dust on residential, commercial, and municipal properties in the vicinity of the former CDE facility. These findings led to a series of removal actions on nearby properties, performed by both the EPA and potentially responsible parties (PRPs), and also led EPA to focus on further investigations at additional nearby properties. In September 2003, EPA selected an OU1 remedy addressing PCB-contaminated soils and interior dust at properties in the vicinity of the former CDE facility. The remedy required the excavation, off-site transportation, and disposal of PCB-contaminated soils, along with property restoration. The OU1 remedy also called for interior dust cleaning at properties where PCBs were detected indoors. EPA began remediating the first group of OU1 properties in 2005; remediation work was substantially completed in 2014. As of February 2014, over 135 properties have been sampled as part of the OU1 remedy (including properties sampled during earlier phases of investigation), leading to remedial actions at 34 properties.

OU2 Remedy and Remedial Action

The OU2 RI, which included collection of soil, sediment, building surface samples, and the installation and sampling of 12 shallow bedrock monitoring wells on the former CDE facility, found extensive contamination on site. In 2004, EPA issued a ROD for OU2. The main components of the OU2 remedy included:

- Demolition of buildings;
- Excavation of an estimated 107,000 cubic yards of the most highly PCB- and VOC-contaminated soil;
- On-site treatment of excavated soils using low temperature thermal desorption (LTTD), followed by backfilling of excavated areas with treated soils;
- Transportation of contaminated soil and debris not suitable for LTTD treatment to an off-site facility for disposal, with treatment as necessary;
- Installation of engineering controls including a multi-layer cap or hardscape; and,
- Implementation of institutional controls.

In 2006, the OU2 remedial action began. The work was substantially completed in September 2012.

OU3 Remedy and Remedial Action

The OU3 RI (initiated in 2008) revealed a complex groundwater flow regime in highly fractured bedrock, with high levels of VOCs, consisting primarily of TCE and cis-1,2-dichloroethylene (cis-1,2-DCE), and other compounds trapped within the pore spaces of the Passaic Formation (consisting of shale, mudstone and sandstone). The investigation also revealed several high capacity water supply pumping centers that exert significant control over the regional groundwater flow regime, several of which have been intermittently operational since the releases occurred at the former CDE facility. These hydraulic influences led to an extensive, area-wide VOC groundwater plume, and allowed for a wider distribution of contamination in the bedrock pore spaces.

In September of 2012, EPA issued the OU3 ROD that selected institutional controls, long-term monitoring of groundwater and vapor intrusion at nearby residences, and incorporated a waiver of groundwater ARARs due to technical impracticability.

The OU3 ROD also identified the potential for contaminated groundwater discharge to surface water in Bound Brook at levels that would pose an unacceptable risk. In addition, the OU3 ROD acknowledged that further assessment of the potential for release of PCBs from the groundwater to surface water within the Bound Brook corridor was needed and would proceed as part of the OU4.

Enforcement Activities

EPA has identified potentially responsible parties (PRPs) for the site, including former owners and operators CDE and Dana Corporation. In addition, DSC, the current owner of the site property, has been named as a PRP.

Early in the cleanup process, five administrative orders were issued to the various PRPs for the performance of portions of removal actions required at the site. These included a site stabilization order issued to DSC in 1997; and in 1998, 1999, and 2000, EPA entered into a series of administrative orders with the PRPs to implement removal actions at 14 nearby residential properties with PCB-contaminated soil.

The PRPs declined to undertake the remedial investigation and feasibility study (RI/FS), or to perform the OU1 and OU2 remedial actions. Dana Corporation declared bankruptcy in 2006, and EPA reached a bankruptcy settlement in 2008.

Subsequently EPA reached settlements with both CDE and DSC, in the form of consent decrees requiring payment of response costs, which were approved by the federal court in October 2014 and March 2015, respectively.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA has worked closely with public officials and other interested members of the community since the site was first placed on the NPL. The Proposed Plan and supporting documentation for OU4 were released to the public for comment on September 30, 2014. The Proposed Plan and index for the Administrative Record were made available to the public online, and the entire Administrative Record file was made available at the EPA Administrative Record File Room, 290 Broadway, 18th Floor, New York, New York, and at the South Plainfield Public Library, 2484 Plainfield Avenue, South Plainfield, New Jersey.

On October 3, 2014, EPA published a notice in the *South Plainfield Observer* newspaper that contained information about the public comment period, the public meeting for the OU4 Proposed Plan, and the availability of the administrative record for the site. The public comment period began on September 30, 2014. The public comment period was scheduled to last 45 days, however, it was extended to 76 days in response to the request of a party wishing to submit comments. EPA published a press release on November 10, 2014, that announced the extension of the comment period. The comment period closed on December 15, 2014.

A public meeting was held on October 21, 2014, at the South Plainfield Senior Center, 90 Maple Avenue, South Plainfield, New Jersey. The purpose of this meeting was to inform local officials and interested members of the public about the Superfund process, present details about EPA’s remedial plan, receive comments on the Proposed Plan, and respond to questions from area residents and other interested parties. Responses to the comments received at the public meeting, and in writing during the public comment period, are included in the Responsiveness Summary, attached as Appendix V to this ROD.

SCOPE AND ROLE OF THIS OPERABLE UNIT

This is the final planned remedy for the site (see Figure 1), which addresses PCB-contaminated brook sediments and floodplain soils, capacitor debris, contaminated groundwater that discharges to Bound Brook, and a municipal waterline beneath the former CDE facility. The primary contaminants of concern identified in site soils were TCE and PCBs. (The RI report documents the full extent of contaminants detected at the site.) These chemicals were released at the site in large quantities, as evidenced by the extent of the OU2 remedy, which required the excavation and treatment of principal threat wastes[1] (PTW) down to the top of the bedrock surface.

Bound Brook sediments were impacted by historical disposal of capacitors and process waste on the banks of the brook; erosion and transport of contaminated surface soils from the former CDE facility via storm run-off into the brook; and on-going discharge of impacted groundwater to the brook. Although the closure of the former CDE facility and recent remedial action at OU2 reduced the release of contaminants to the brook, a significant volume of contaminated sediment remains in the brook and capacitor debris remains buried in the Bound Brook’s banks adjacent to the former CDE facility. Impacted groundwater has been found to continue to discharge into the brook. Contaminated sediments have been carried downstream by surface water flows and have accumulated in low flow areas in the brook, in silt traps, and behind man-made dams and culverts along the brook.

The thickest sediment deposits exist in an approximately 3-mile stretch between New Market Pond (located downstream) and the former CDE facility, see Figure 1. The most pervasive sediment contaminants, PCBs, are persistent and do not degrade readily under most conditions. While some of the contaminants may disperse through erosional forces in the brook (primarily under high flow conditions), estimates of contaminant half-lives from the high resolution sediment core collected in New Market Pond suggest that the sediment PCB half-life is on the order of 50 years, if the conditions associated with the last 20-30 years persist into the future. In general, the highest concentrations of PCBs were measured at the top of sediment core samples, and burial via deposition of relatively “cleaner,” more recent solids was not observed in sediment samples.

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1 The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure. Principal threat materials are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

Floodplain soils are also contaminated due to transport of contaminated sediment into the floodplains/wetlands surrounding Bound Brook during flood events. With uncontrolled sediment deposits in the brook, the potential remains for continued transport of contaminants to the floodplain soils. Degradation and dispersion of existing contaminants are likely to be minimal.

EPA’s findings indicate the presence of PTW in the form of capacitors and capacitor debris along the banks of Bound Brook near the former CDE facility.

Surface waters are contaminated primarily from re-suspension of contaminated sediments in Bound Brook and erosion of the banks during flooding. Surface water sample results also indicate an impact from contaminated groundwater discharge in the vicinity of the former CDE facility.

A 36-inch waterline, approximately 100 years old, was discovered during the implementation of the OU2 remedy. The waterline traverses the former CDE facility beneath the OU2 remedy cap and Bound Brook. This remedy will also address the questionable integrity of the waterline to ensure that current and future remedies are not compromised by leaks or ruptures.

SUMMARY OF SITE CHARACTERISTICS

Previous Sampling Efforts and Results

In 1997, EPA collected soil, sediment and surface water samples, from a 2.4-mile stretch of the Bound Brook stream corridor near the former CDE facility. EPA also collected biota samples (small mammals, crayfish, forage fish, and edible fish) and conducted sediment toxicity testing to support a preliminary ecological risk assessment (ERA). The preliminary ERA concluded that the structure and function of the stream ecosystem within Bound Brook and its corridor was at risk from chemical contamination. In response, on August 8, 1997, NJDEP issued an interim fish consumption advisory for Bound Brook and New Market Pond (located a few miles downstream of the former CDE facility). The preliminary ERA conclusions are found in the 1999 *Final Report: Ecological Evaluation for the Cornell-Dubilier Electronics Site.*

Because most of the Bound Brook watershed is developed, with many industries and potential sources of contamination, EPA concluded that a study of the entire Bound Brook corridor would be necessary. EPA also determined that the former CDE facility should be addressed first (OU2).

In addition to the preliminary Bound Brook sampling in 1997, a number of sampling activities took place between 1999 and 2008. The results of these activities were incorporated into EPA's overall understanding of the site:

- In April 1999, NJDEP collected sediment samples from 33 locations in Spring Lake, Cedar Brook, and a second tributary stream between Maple Avenue and Cedar Brook. The samples were analyzed for PCBs and pesticides. Results in surface and subsurface sediments from Spring Lake and its tributaries were non-detect.
- In 1999, as part of the OU1 investigation, EPA collected samples from residential properties bordering Bound Brook at Fred Allen Drive and Sillaci Lane to determine whether flooding may have resulted in PCB contamination at these properties. Sampling indicated that the residential properties were not affected, however, the neighboring floodplain soils were found to have PCB contamination.
- In 1999, buried debris was discovered in Veterans Memorial Park, primarily in the form of roofing materials and asbestos. Working with the Borough of South Plainfield, EPA tested the debris and soils in the park and concluded that the debris did not originate from the CDE operations but that low levels of PCBs (presumably deposited from flooding) were found in buried soils at the park. South Plainfield performed an extensive debris removal action under NJDEP direction, with the understanding that EPA would evaluate the PCB residues as part of its Bound Brook study.
- In April 2007, erosion exposed buried capacitor debris in the banks of Bound Brook near the former CDE facility. In response, in the Fall of 2008, EPA conducted a removal action to armor the banks of Bound Brook with geotextile fabric and rip-rap adjacent to the former CDE facility and along the wetlands that border the former CDE facility property.
- During implementation of the OU2 remedy, soil sampling and test pits identified high levels of PCBs and buried capacitors along the edge of the OU2 remedy's southern and eastern boundaries, adjacent to Bound Brook. Buried capacitors were present throughout this area, now referred to as the capacitor debris area within the Bound Brook banks.
- In response to the conditions addressed in the 2008 removal

action noted above, EPA performed a follow-up investigation of sediments, surface water and biota, to update the 1997 preliminary ERA. EPA collected additional fish and invertebrate (clam) samples in Bound Brook to reassess ecological risks and to “fingerprint” the PCB congeners[2] within Bound Brook between the former CDE facility and New Market Pond. In addition, 12 sediment samples were analyzed for PCB congeners and considered in the reassessment. These sediment samples were co-located with some of the biota stations. The 2008/2009 reassessment supported the 1997 conclusion that an ecological risk to fish and wildlife exists within the Bound Brook corridor, including Spring Lake. The reassessment also suggested that no improvement in sediment/biota conditions had occurred during the intervening 11 years.

All previous surface water, sediment, and soil sampling results from Bound Brook were incorporated into the 2014 OU4 RI report. In addition, the OU4 investigation included the stretch of Bound Brook that flows through the Woodbrook Road Dump Superfund site (located approximately 1 mile upstream of the former CDE facility). The Woodbrook site is a former dump that accepted household and industrial waste as well as CDE capacitors. The Woodbrook site was listed on the NPL in 2003. Bound Brook sediment and surface water data collected during the investigation of the Woodbrook site were also incorporated into the OU4 RI.

Site Overview

A River Mile (RM) system was developed for the OU4 RI, with “River Mile zero” (RM 0) placed at the confluence of Bound Brook and Green Brook (Figure 1). This RM system was used to position RI sampling locations, reference historical sampling locations, and describe the location of prominent site features. The upstream extent of the investigation ended at RM 8.3, the Talmadge Road Bridge on Bound Brook in Edison Township. The downstream extent is at RM(-1.6) nearby the Shepherd Avenue Bridge on Green Brook in Bridgewater.

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2 PCBs are a group of 209 different compounds. A PCB congener is any single, well-defined chemical compound in the PCB category. Environmental studies sometimes focus on specific PCB congeners (rather than “total PCBs”) because diverse PCB congeners were used for different purposes, and certain PCB congeners have demonstrated more pronounced health effects in the environment.

The upland areas surrounding the OU4 investigation contain a mixture of land uses including residential, commercial, industrial (including railroads), and recreational or undeveloped land.

Physical Characteristics of the Site

A few notable prominent site features in the OU4 investigation (also referred to as the “study area”) include: Confluence of Bound Brook and Green Brook (RM 0); New Market Pond dam (RM 3.4); Confluence of Bound Brook and Cedar Brook (RM 5.75); Twin Culverts (RM6.55) near the former CDE facility; Woodbrook site (RM 7.4 to RM 7.8); and, Talmadge Road Bridge (RM 8.3). See Figure 1 for identification of the mile marker locations.

A 1.6-mile stretch of Green Brook was included in the RI for potential site-related impacts. Green Brook has comparatively higher flows than Bound Brook and its sediment bed consists of coarse-grained material. The floodplain uses in this area are characterized as residential and public land, similar to Green Brook’s confluence with Bound Brook.

Upstream of its confluence with Green Brook, but downstream of New Market Pond, Bound Brook is comparatively shallow and its bed consists of coarse-grained material. The brook flows through a residential neighborhood with some light industrial/commercial use surrounded by forested lands.

New Market Pond is a constructed impoundment that stretches from RM 3.4 to RM 4.1. The pond originally served as a mill pond and was constructed in the early nineteenth century. The pond was dredged in 1985-1986 to an approximate depth of 3 feet on the eastern side, transitioning to 6 feet on the western end near the dam. During dredging, a silt trap was constructed at the inlet to New Market Pond. Following dredging, the area surrounding the pond was developed into a park and the dam was rebuilt. Currently, New Market Pond covers approximately 17.6 acres.

For the next two miles upstream of New Market Pond, Bound Brook is surrounded by industrial facilities (such as MRP Steel Fabrication & Engineering), cemeteries, and wetland areas. Debris (cinderblock, rip rap, rocks or other hard debris) is common in this stretch of the brook.

The confluence of Bound Brook and Cedar Brook occurs at RM 5.75

in a wetland and parkland area known as Veterans Memorial Park. Approximately one-half mile upstream of Cedar Brook is Spring Lake. Spring Lake originally served as a mill pond in the nineteenth century and varied in shape through the years. The area of the current lake is 6.5 acres and is surrounded by parkland.

A former railroad right-of-way crosses Bound Brook adjacent to the former CDE facility at RM 6.55 at the Twin Culverts. This right-of-way once provided rail access to the facility.

The former CDE facility is located at approximately RM 6.2 and RM 6.55, and is bounded on the northeast by Bound Brook and the former Lehigh Valley Railroad, Perth Amboy Branch (presently Conrail); on the southeast by Bound Brook and a property used by the South Plainfield Department of Public Works; on the southwest, across Spicer Avenue, by single family residential properties; and to the northwest, across Hamilton Boulevard, by mixed residential and commercial properties.

The land use is residential, recreational or open space upstream of the CDE facility. Several ball fields and recreational areas are also nearby in this area.

At RM 7.4, Bound Brook passes an active South Plainfield municipal recycling and yard waste drop-off center. The upstream extent of the OU4 study area is the Talmadge Road Bridge located in Edison, New Jersey. In general, this area is surrounded by wetlands, forest lands, and urban areas.

Upstream of the former CDE facility, in addition to the Woodbrook site, three former facilities were identified outside the OU4 study area but near Bound Brook or a tributary: Tingley Rubber Corporation (a former manufacturer of rubber footwear), Gulton Industries, Inc./Hybrid Printhead (a former industrial site), and Chevron Chemical Company/Ortho Division (a former pesticide manufacturer).

The scope of the OU4 study area also included two major tributaries: the unnamed tributary near New Brunswick Avenue at RM 4.7 and the unnamed tributary near Elsie Avenue at RM 5.5.

Site Geology and Hydrogeology

The surficial geology of the OU4 study area is composed primarily of alluvial and glaciofluvial deposits, with some bedrock outcroppings in the stream bed. Downstream of New Market

Pond, the stream bed is composed of mainly coarse-grained sediments. Weathered bedrock borders a band of alluvium material at RM 3.5, centered along Bound Brook. Rock outcrops are visible along the banks of Bound Brook downstream of New Market Pond and near RM 3.0. Glaciofluvial deposits lie to the north of the alluvium material. The band of alluvium deposits extends through RM 5.0, with the stream beds consisting of fine-grained sediments accumulating behind the New Market Pond dam.

By RM 6.0, the alluvial deposit narrows and is pinched out by glaciofluvial material and weathered shale, mudstone and sandstone. Rock outcrops of the Passaic Formation are visible in the field along the banks of Bound Brook near the former CDE facility, with the stream bed consisting of weathered, fractured bedrock. These formations dominate until RM 6.2, when a thin band of swamp and marsh deposits appears. Upstream of the former CDE facility, the field along the banks of Bound Brook is a *phragmites*-dominated wetlands. The swamp and marsh deposits begin to expand at RM 7.2, ultimately filling in the southern part of the OU4 study area by RM 7.5 and thinning the zone of glaciofluvial material to the north. At RM 7.5, the extent of the OU4 study area narrows to only include Bound Brook because the banks and tributaries were investigated under the Woodbrook Road site[3]. This stretch of Bound Brook flows through swamp and marsh deposits.

Groundwater[4], to a depth of approximately 120 feet below ground surface (bgs), has the potential to be hydraulically connected (discharging) to Bound Brook near the former CDE facility. The water table fluctuates seasonally, occurring in the unconsolidated deposits during periods of high recharge and in the underlying bedrock during seasonally low recharge. The groundwater encountered in the unconsolidated deposits is hydraulically connected to the shallow unconfined bedrock aquifer. Shallow groundwater is also hydraulically connected to surface water bodies including Bound Brook, Cedar Brook, and Spring Lake. Groundwater to a depth of 120 feet bgs moves north and east from the former CDE facility toward Bound Brook, and northwesterly toward the low-lying area at the confluence of Bound Brook and Cedar Brook. To the northeast of the former CDE facility, immediately across Bound Brook, groundwater flow is

3 The 2013 ROD for the Woodbrook site addressed the upland areas but not the Bound Brook itself, which was left to be addressed as part of this phase of the CDE site.
4 Please refer to the OU3 ROD for a comprehensive discussion of groundwater. OU4 only addresses groundwater that discharges to surface water in Bound Brook.

generally toward the west to a depth of 120 feet bgs, with groundwater discharging to Bound Brook, Cedar Brook and Spring Lake.

Measurements of groundwater elevations between 120 and 160 feet bgs and between 200 and 240 feet bgs indicated that the generalized direction of groundwater movement is to the north with the gradient generally trending northwest near the former CDE facility before turning to the north-northeast as a result of the influence of local pumping centers. Groundwater in water-bearing zones below 120 feet bgs is not hydraulically connected to surface water bodies.

NATURE AND EXTENT OF CONTAMINATION

EPA’s investigation of the physical characteristics of the OU4 study area consisted of: probing sediments to evaluate sediment texture and unconsolidated sediment depth on transects spaced every 100 feet throughout the investigation; analysis of sediment core samples for physical properties (*e.g.*, moisture content, bulk density, grain size, Atterberg Limits); bathymetric and side scan sonar surveys to map water depth and surface sediment texture in New Market Pond; cross-section surveys of Bound Brook; and the installation and monitoring of water level elevations in Bound Brook, its tributaries, and New Market Pond. Flow measurements were also collected on a monthly basis from various water level locations. These data and other datasets were used to set up and calibrate a hydraulic model and sediment transport model in support of the OU4 Feasibility Study (FS) and allow characterization of net erosional/net depositional characteristics on an overall reach-by-reach (between surveyed cross-sections is referred to as “reaches”) basis.

Much of the contaminant mass present in OU4 was released decades ago (CDE was operating from 1936 to 1962) and has slowly dispersed into the environment through natural fate and transport processes. A summary of contamination within each of the major environmental media at OU4 is provided below.

Sediments

Analytical results indicate the presence of PCB contamination in the sediments of Bound Brook, generally extending from the upstream boundary of the former CDE facility to the dam at the downstream end of New Market Pond in Piscataway (a distance of approximately 3.3 miles along Bound Brook). PCB concentrations ranged from a maximum detection of 85 milligrams per kilogram (mg/kg) in the vicinity of the former CDE facility to approximately 4.4 mg/kg in New Market Pond. Concentrations downstream of the New Market Pond dam decreased markedly to approximately 0.23 mg/kg at Bound Brook’s confluence with Green Brook; concentrations in Green Brook ranged from non-detect to 0.16 mg/kg. These findings are consistent with prior EPA sampling of Bound Brook.

PCB analyses of recently-deposited sediments confirmed that contaminated sediments were transported along Bound Brook and suggest that New Market Pond is acting as a sediment trap for solids and contaminants transported downstream. Sediment probing, radiological-dated surface sediment samples, and low resolution sediment cores also revealed that at least two isolated pockets of contaminated sediment are present just downstream of New Market Pond. These locations likely represent the first areas downstream of the New Market Pond dam where the flows and shear stresses decrease to a point such that fine-grained solids (and associated contaminants) in the water column have an opportunity to settle after flowing over the dam. Data from sediment core samples and recently-deposited sediment samples indicate a significant decreasing trend in PCB concentrations with increasing distance downstream of the New Market Pond dam.

Evaluation of PCB data from the most recently deposited sediment samples indicated that the highest detected concentrations, at 24 mg/kg, were located adjacent to the former CDE facility. Conversely, upstream of the former CDE facility, the recently deposited PCB concentrations averaged 0.53 mg/kg[5], which would not be indicative of an upstream source.

For comparison, the sediment within Ambrose Creek (similar to Bound Brook and nearby) was sampled to obtain reference values, and also provides chemical background results, i.e., background data. The sediments within Ambrose Creek ranged from 0.0026 to 0.0298 mg/kg PCBs. Similarly, Lake Nelson sediment was also sampled for chemical content. Lake Nelson is similar to New Market Pond and also nearby. The resulting analysis of the

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5 The “recently deposited sediment” data, collected with specialized sampling equipment, is used to assess whether sediments are currently being transported within the system, or if the sediments are stable (little or no movement). These data cannot be compared directly with traditionally collected sediment data. The average detected PCB concentration upstream of the CDE facility using traditional methods is 0.15 mg/kg.

sediment at Lake Nelson detected a concentration of 0.064 mg/kg PCBs.

To evaluate the depositional history of sediment contamination in Bound Brook, a high-resolution sediment core (finely-segmented into approximately 3 to 5 centimeter (cm) sampling intervals) was collected from a location in New Market Pond that was anticipated to be continuously depositional based on sediment probing data, observed flow regimes, and historical dredging records. The sediment samples from the high resolution core were analyzed for radionuclides to obtain an approximate depositional year to be assigned to each segment. The depositional chronology of total PCB (congeners) in the high resolution sediment core mirrors the history of the former CDE facility, which operated from 1936 to 1962. The absolute concentration of total PCB in the high resolution sediment core peaks sharply circa 1956, at 66 mg/kg, and concentrations subsequently decline to 11 mg/kg in the core top sample. This chronology suggests that New Market Pond sediments in 1956 were characterized by PCB concentrations that were about a factor of 5 higher than the current surface sediment concentration.

EPA evaluates sediment sites for the potential that “natural recovery” may be reducing the risks posed by contaminated sediments over time. At Bound Brook, areas like New Market Pond may demonstrate natural recovery because sediments tend to deposit there over time, and newer, cleaner sediments may bury deeper, contaminated sediments. A comparison of current and historical surface sediment data (1997-2011) revealed little change in PCB concentrations over the past 14 years, suggesting that natural recovery is not currently occurring in Bound Brook, because newly deposited sediments are also contaminated. Since there is a demonstrated depositional pattern to New Market Pond, upstream sources associated with the CDE facility (such as the capacitor debris area and the groundwater, discussed below) appear to be continuing sources of contaminated sediments to the lower reaches of the stream. This observation is consistent with trends in the PCB concentrations observed in sediments deposited in New Market Pond over the past 20 years and detected in the high resolution sediment core.

Because areas of Bound Brook are net-depositional, if sediments were addressed to the degree that no additional PCB contaminant load entered the system, natural recovery could be a component to a Bound Brook remedy. Based upon the rate of deposition estimated in the RI/FS, PCB concentrations can expect to decrease by 50 percent every 50 years (i.e., a “half-life” of 50 years) if clean sediments are entering the system and burying contaminated sediments. For example, if there were no PCBs entering the system in “new” sediments, the current average PCB surface sediment concentration of approximately 10 mg/kg in New Market Pond would be reduced by half (to 5 mg/kg) after 50 years, and to 2.5 mg/kg after 50 more years, etc.

The conceptual site model of sediment transport suggests that flood-borne contaminated sediments come to be deposited in the floodplains over time, but that under current conditions the floodplains generally do not act as an ongoing source of PCB contamination to the stream channel.

Floodplain Soil

The OU4 RI included an investigation of Bound Brook floodplain and bank soils for contamination, via soil borings positioned on transects extending out from the brook and along gridded areas positioned near the confluence of Bound Brook and Cedar Brook. The highest PCB floodplain soil concentrations were detected downstream of the former CDE facility, in the floodplains between the confluence of Bound Brook and Cedar Brook (with PCB concentrations detected up to 70 mg/kg on the banks). The area of the Cedar Brook/Bound Brook confluence and a manmade dam between the former CDE facility and the confluence are the first significant depositional zones downstream of the former CDE facility. The RI data indicate that PCB soil contamination is being transported from the brook to the floodplains during flooding events.

The area surrounding the confluence of Bound Brook and Cedar Brook is also the location of Veterans Memorial Park in South Plainfield. Interim remedial measures conducted at the park by the Borough of South Plainfield in 2003 included excavation and off-site disposal of contaminated soil (followed by capping with clean topsoil) and institutional controls designed to limit public access to the floodplains between Bound Brook and Cedar Brook. In the surface soils at Veterans Memorial Park, the highest detected PCB concentration (2013 OU4 RI data) was 1.8 mg/kg; historically, surface soil concentrations at the park were reported as less than 1 mg/kg. Data from residential properties located near the park also characterizes surface soil PCB concentrations as less than 1 mg/kg.

Capacitor Debris

The OU2 remedy addressed total PCB concentrations greater than

500 mg/kg as principal threat waste (PTW). This material was excavated and either treated on-site using LTTD followed by backfilling of the treated material or, for those materials not amenable to treatment, disposed of off-site. The former CDE facility consisted of large disposal areas containing tens of thousands of discarded capacitor casings and parts contaminated with PCBs. During the LTTD treatment process, intact capacitors and larger capacitor parts proved to be difficult to treat, and much of this material was sorted out of the soil and transported off site for disposal. Along with treated soil, soil with PCB concentrations less than 500 mg/kg remained on-site under a multi-layer cap.

The OU2 remedy encompassed the developed portion of the CDE facility, which at the time of the ROD was a fully-occupied industrial facility, zoned for industrial/commercial use. It retains the same zoning today, and the expected future land use (per South Plainfield redevelopment plans) remains commercial.

During the RI for OU2, capacitors were discovered in the floodplain/wetland area between the former CDE facility and the Bound Brook streambed. EPA concluded that these buried capacitors should be addressed separately, given the different potential land uses and exposure scenarios potentially available for floodplain soils.

During the OU4 RI, near the boundary of the OU2 soil excavation and remediation area along the Bound Brook bank, soil borings were advanced to a depth of about 10 feet bgs at four locations. The soil borings were advanced to determine the vertical extent of capacitor waste previously observed in test pits performed by EPA in 2008, with final boring locations adjusted using the limits of OU2 soil remediation and associated observations and OU2 post-excavation sidewall sampling results. A PCB concentration of 3,000 mg/kg, encountered in one of these borings, marks the highest PCB concentration detected during the OU4 RI. Moreover, capacitor waste was observed in the borings, confirming that waste is still present in the banks of Bound Brook adjacent to the former CDE facility. While the bank armoring and geotextile installed as part of the 2008 removal action continues to minimize bank erosion, this is only a temporary measure and this area is still considered an ongoing source of PCB contamination to Bound Brook.

Groundwater

The previous RI for OU3 (site-related contaminated groundwater) revealed the potential for transport of contaminated groundwater from the former CDE facility to Bound Brook, based on stream elevation surveys, groundwater modeling, and consideration of current municipal pumping regimes. The OU4 RI characterized the potential for groundwater contaminants to impact Bound Brook via stream flow surveys and passive sampler (porewater and surface water) deployment and analysis. While the sediment beds in Bound Brook currently possess a large contaminant inventory, the PCB load in groundwater discharging to Bound Brook near the former CDE facility will become a concern in the future as a potential source of recontamination of remediated sediments. Detected PCB surface water concentrations averaged approximately 75 nanograms per liter (ng/L) adjacent to the former CDE facility.[6] This average exceeds New Jersey’s Surface Water Quality Criterion (fresh water, aquatic receptor) of 14 ng/L for total PCBs by a factor of 5. Most of the PCB loading to the water column occurs within one-tenth of a mile downstream of the twin culverts (adjacent to the former CDE facility), with total PCB levels increasing from background levels of 4.8 ng/L to an average of 75 ng/L. Total PCB surface water concentrations are relatively constant downstream of the former CDE facility. A porewater contaminant mass flux to Bound Brook was estimated using a calculated groundwater flux and total PCB porewater (sampled at a depth interval of 0 to 5 cm) concentrations. The total PCB mass flux increases by a factor of 20 above background in the same one-tenth of a mile interval. The detected presence of VOCs in the porewater and sediments near the former CDE facility provided an additional line of evidence that contaminated groundwater is discharging to Bound Brook. Moreover, elevated total PCB concentrations in the surface water, porewater, and sediments coincide with total VOC porewater detections, suggesting that chlorinated solvents in the groundwater may be enhancing the mobility of PCBs due to co-solvency.

Municipal Waterline

Much of the utility infrastructure in South Plainfield dates from the early 20th century, with limited information about its construction or location. During the OU2 soil remediation work, a 36-inch-diameter municipal waterline, owned by the New Jersey American Water (NJAW), was uncovered. NJAW records suggest that the waterline was installed in 1908. It is constructed of cast iron and runs across the limits of the former CDE facility from the southwestern corner to the northeastern corner of the

6 Several passive samplers were installed directly in an outcropping bedrock fracture, yielding higher concentrations that were accounted for in the averaging.

property at a depth of approximately 3 to 5 feet bgs.

To protect the integrity of the waterline, the OU2 soil excavation removed soil from around the pipe in small sections, with oversight by NJAW. Although the pipeline was not physically damaged during the excavation process, in February 2011, the pipe failed in an area outside the excavation, flooding the OU2 work area. The water was contained within the excavation and did not result in a release of contaminants from the area, and EPA worked with NJAW to dewater the excavation and repair the broken pipe.

Eventually, the aging of the infrastructure is likely to lead to additional leaks or a rupture in this pipe. The earlier pipe break was addressed with no long-term consequences, because the open excavation areas acted as a retention basin. This would not be true if, in the future, a pipe break or leak were to rupture the cap. Instead, the break could transport contaminated soils into Bound Brook, compromising the integrity of the OU2 remedy and releasing contaminants into OU4. This concern prompted the evaluation of alternatives under this OU to prevent, or substantially reduce the likelihood of a break in the future.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Site/Land Uses: The stretch of the Bound Brook corridor studied under OU4 winds through a variety of lands with different uses. The brook negotiates through floodplains, wetlands, forested lands, and urban areas that include residential and industrial properties. Between RM 5.80 and 6.10 is a notable wetland, parkland and recreational area referred to as Veteran's Memorial Park. Throughout the Bound Brook corridor there are nature trails, New Market Pond, and open spaces where the public explores, hikes and fish among other things. The community has expressed a strong interest in having these areas restored and for the land to remain open space with ecological habitat. The Borough of South Plainfield has also echoed this sentiment.

EPA's selection of a remedy for OU4 is not anticipated to affect or impair these land uses.

Groundwater Uses: Groundwater underlying the Bound Brook is considered by New Jersey to be Class IIA, a source of potable water; however, residents and businesses in the area of the Bound Brook are currently using publicly supplied water, which is treated to assure all drinking water standards are met for PCBs, VOCs or other contaminants.

SUMMARY OF SITE RISKS

As part of the RI/FS, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The baseline risk assessment includes a human health risk assessment (BHHRA) and an ecological risk assessment (BERA). It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the baseline risk assessment for the study area.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario:

- *Hazard Identification* – uses the analytical data collected to identify the contaminants of potential concern (COPC) at the site for each medium, with consideration of a number of factors explained below;
- *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways by which humans are potentially exposed;
- *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and
- *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations which exceed acceptable levels, defined by the NCP as an excess lifetime cancer risk greater than 1×10^{-6} to 1×10^{-4} or a Hazard Index greater than 1.0; contaminants at these concentrations are considered chemicals of concern (COCs) and are typically those that will require remediation at the site. Also included in this section is a discussion of the uncertainties associated with these risks.

Hazard Identification

In this step, COPCs in each medium were identified based on such factors as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations, mobility, persistence and bioaccumulation. The area along the Bound Brook corridor includes parks, commercial properties and residences. Future land use along the brook is expected to remain the same. The baseline risk assessment began by selecting COPCs in surface water, floodplain soil, sediment, fish and shellfish (i.e., Asiatic clams and crayfish). The COCs are PCBs; also contributing to the risks are benzidine in surface sediment, and other compounds not considered to be site-related, such as heptachlor epoxide in fish fillet, and dieldrin and select metals (i.e., antimony, iron, lead, manganese and thallium) in floodplain soil. A comprehensive list of all COPCs can be found in the BHHRA in the administrative record. Only the COCs are listed in Table 1.

Exposure Assessment

Consistent with Superfund policy and guidance, the BHHRA is a baseline human health risk assessment and therefore assumes no remediation or institutional controls to mitigate or remove hazardous substance releases. Cancer risks and noncancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at the study area. The RME is defined as the highest exposure that is reasonably expected to occur at a site.

The Bound Brook and its floodplains are currently zoned for residential and commercial use, and include parks and recreational areas. It is anticipated that the future land use for this area will remain consistent with current use. The BHHRA evaluated potential risks to populations associated with both current and potential future land uses. Exposure pathways were identified for each potentially exposed population and each potential exposure scenario for the surface water, sediment, floodplain soils, fish and shellfish tissue. Based on the current zoning and anticipated future use, the risk assessment focused on a variety of possible receptors, including current and future:

- **Recreationists/Sportsmen:** adults and adolescents (7-18 years old) who may wade, fish (but not consume) or otherwise recreate in the study area and might be exposed through: dermal contact with surface water; incidental ingestion of and dermal contact with surface sediment and surface soil; inhalation of volatiles released from surface water; and inhalation of particulates released from surface soil.

- **Anglers:** adults, adolescents (7-18 years old) and children (0-6 years old) who may consume locally-caught fish or shellfish. While this was in addition to the exposures identified above for recreationists/sportsman adults and adolescents, it was assumed that children are only exposed through consumption of locally-caught fish or shellfish in the household.
- **Outdoor Workers:** adults who may work to maintain, repair, and/or clean culverts, spillways, bridges, and other structures in the study area and might be exposed through: dermal contact with surface water; incidental ingestion of and dermal contact with sediment and soil; inhalation of volatiles released from surface water; and inhalation of particulates released from soil.
- **Residents:** adults and children (0-6 years old) who live within or near the 100-year floodplain areas and might be exposed through incidental ingestion of and dermal contact with soil and inhalation of wind-generated particulates released from soil.
- **Commercial/Industrial Workers:** adults who primarily work outdoors on commercial/industrial properties located within the 100-year floodplain areas and might be exposed through incidental ingestion of and dermal contact with surface soil and inhalation of wind-generated particulates released from surface soil.
- **Construction/Utility Workers:** adults who may perform short-term intrusive work for construction or utility installation, maintenance, or repair and might be exposed through incidental ingestion of and dermal contact with soil and inhalation of mechanically-generated particulates released from soil.

Because the study area is nearly ten miles long and the contamination is not homogeneous, multiple exposure units were established for the risk assessment. They are based upon physical features of the Bound Brook system, as well as historic PCB concentrations, and include: Green Brook (GB), Bound Brook 1 (BB1), Bound Brook 2 (BB2), Bound Brook 3 (BB3), Bound Brook 4 (BB4), Bound Brook 5 (BB5 – adjacent to the former CDE facility), Bound Brook 6 (BB6) and Spring Lake (SL). See Figure 2 for exposure unit locations.

A summary of the exposure pathways included in the BHHRA can be found in Table 2. Typically, exposures are evaluated using a statistical estimate of the exposure point concentration, which is usually an upper bound estimate of the average concentration for each contaminant, but in some cases may be the maximum detected concentration. A summary of the exposure point concentrations for the COCs in each medium can be found in Table 1, while a comprehensive list of the exposure point concentrations for all COPCs can be found in the BHHRA.

Toxicity Assessment

In this step, the types of adverse health effects associated with contaminant exposures and the relationship between magnitude of exposure and severity of adverse health effects were determined. Potential health effects are contaminant-specific and may include the risk of developing cancer over a lifetime or other noncancer health effects, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some contaminants are capable of causing both cancer and noncancer health effects.

Under current EPA guidelines, the likelihood of carcinogenic risks and noncarcinogenic hazards due to exposure to site chemicals are considered separately. Consistent with current EPA policy, it was assumed that the toxic effects of the site-related chemicals would be additive. Thus, cancer and noncancer risks associated with exposures to individual COPCs were summed to indicate the potential risks and hazards associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Toxicity data for the human health risk assessment were provided by the Integrated Risk Information System (IRIS) database, the Provisional Peer Reviewed Toxicity Database (PPRTV), or another source that is identified as an appropriate reference for toxicity values consistent with EPA's directive on toxicity values. This information is presented in Table 3 (noncarcinogenic toxicity data summary) and Table 4 (cancer toxicity data summary). Additional toxicity information for all COPCs is presented in the BHHRA.

Risk Characterization

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and benchmark comparison levels of intake (reference doses, reference concentrations). Reference doses (RfDs) and reference concentrations (RfCs) are estimates of daily exposure levels for humans (including sensitive individuals) which are thought to be safe over a lifetime of exposure. The estimated intake of chemicals identified in environmental media (*e.g.*, the amount of a chemical ingested from contaminated drinking water) is compared to the RfD or the RfC to derive the hazard quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the HQs for all compounds within a particular medium that impacts a particular receptor population.

The HQ for oral and dermal exposures is calculated as below. The HQ for inhalation exposures is calculated using a similar model that incorporates the RfC, rather than the RfD.

HQ = Intake/RfD

Where: HQ = hazard quotient
Intake = estimated intake for a chemical (mg/kg-day)
RfD = reference dose (mg/kg-day)

The intake and the RfD will represent the same exposure period (i.e., chronic, subchronic, or acute).

As previously stated, the HI is calculated by summing the HQs for all chemicals for likely exposure scenarios for a specific population. An HI greater than 1.0 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures, with the potential for health effects increasing as the HI increases. When the HI calculated for all chemicals for a specific population exceeds 1.0, separate HI values are then calculated for those chemicals which are known to act on the same target organ. These discrete HI values are then compared to the acceptable limit of 1.0 to evaluate the potential for noncarcinogenic health effects on a specific target organ. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. A summary of the noncarcinogenic hazards associated with these chemicals for each exposure pathway is in Table 5.

As seen in Table 5, the potential for adverse, noncarcinogenic health effects was indicated for:

- Adult recreationists/sportsmen at BB5 (refer to Figure 2). The hazard was attributable to PCBs in surface sediment.
- Adolescent recreationists/sportsmen at two exposure units on

Bound Brook (BB5 and BB6[7]). The hazards were predominantly attributable to PCBs in surface sediment and surface soil.

- Adult and adolescent anglers at every exposure unit in the study area, from exposure to fish or shellfish, predominantly, and exposure to surface sediment and surface soil as described above for recreationists/sportsmen. The hazards from exposure to fish were predominantly attributable to PCBs in predatory and bottom-feeding fish. Hazards from exposure to shellfish are attributable to PCBs in Asiatic clams and crayfish.
- Child anglers at every exposure unit in the study area. The hazards from exposure to fish were attributable to PCBs in predatory or bottom-feeding fish fillet. Hazards from exposure to shellfish were attributable to PCBs in Asiatic clams and crayfish.
- Outdoor workers at BB5. The hazard was attributable to PCBs in sediment and soil.
- Adult residents at three of the exposure units on Bound Brook (BB4, BB5 and BB6) and child residents at four exposure units (BB3, BB3, BB5 and BB6). The hazards were attributable to PCBs in soil.
- Adult commercial/industrial workers at BB5 and BB6. The hazards were attributable to PCBs in surface soil.

The noncarcinogenic hazards for COCs estimated for the above receptors in other exposure units were less than 1. The noncarcinogenic hazards for all populations was attributable primarily to PCBs in sediment, soil and fish and shellfish tissue. All noncarcinogenic hazards associated with exposure to surface water are within EPA’s acceptable levels.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen, using the cancer slope factor (SF) for oral and dermal exposures and the inhalation unit risk (IUR) for inhalation exposures. Excess lifetime cancer risk for oral and dermal exposures is calculated from the following equation, while the equation for inhalation exposures uses the IUR, rather than the SF:

$$\text{Risk} = \text{LADD} \times \text{SF}$$

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7 While exposure area BB6 is discussed throughout this section as posing a direct-contact risk under various exposure scenarios, only a small part of the BB6 data set, in an area adjacent to BB5 and near the former facility, was shown to have elevated PCB concentrations. The remainder of BB6 is either nondetect or at levels that do not pose an unacceptable risk.

Where: Risk = a unitless probability (1×10^{-6}) of an individual developing cancer
LADD = lifetime average daily dose averaged over 70 years (mg/kg-day)
SF = cancer slope factor, expressed as [1/(mg/kg-day)]

These risks are probabilities that are usually expressed in scientific notation (such as 1×10^{-4}). An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the conditions identified in the assessment. Again, as stated in the NCP, the acceptable risk range for site-related exposure is 1×10^{-6} to 1×10^{-4}.

As shown in Table 6, total carcinogenic risks for COCs greater than 1×10^{-4} were estimated for the following receptor populations:

- Adult recreationists/sportsmen at BB5. The cancer risks were attributable to benzidine in sediment.[8]
- Adult and adolescent anglers at every exposure unit in the study area. The cancer risks were attributable to PCBs in predatory and bottom-feeding fish.
- Child anglers at every exposure unit in the study area. The cancer risks were predominantly attributable to PCBs in predatory and bottom-feeding fish fillet.
- Adult and child residents at BB5 and BB6. The cancer risks were predominantly attributable to PCBs in soil.

Cancer risks estimated for COCs for the above receptors at other exposure units were less than or within the acceptable risk range established by the NCP. All carcinogenic risks associated with exposure to surface water are within EPA’s acceptable levels.

In summary, the results of the BHHRA indicate that there are significant carcinogenic risks and noncarcinogenic health

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8 Due to uncertainties related to analytical detection limits, the benzidine results from a 1997 sampling effort were confirmed with additional samples collected on August 18, 2014. Concentrations ranged from nondetect to 3 mg/kg in BB5, adjacent to the CDE drainage outfall. By comparison, the 1997 data showed concentrations ranging from 4.6 to 81 mg/kg, which resulted in unacceptable cancer risks for the adolescent and adult recreationists/sportsmen in BB1-BB6.

hazards to potentially exposed populations in all exposure units from ingestion of fish and shellfish contaminated with PCBs.[9] For the angler receptors (adult, adolescent and child), exposure to PBCs in fish and shellfish results in either an excess lifetime cancer risk that exceeds the acceptable risk range established by the NCP or an HI above the acceptable level of 1, or both.

Potential exposure to PCB-contaminated sediment and soil also presented unacceptable risk or hazard to several receptors in the exposure units closest to the CDE facility. The noncarcinogenic hazards and carcinogenic risks from all COPCs can be found in the BHHRA.

The response action selected in the Record of Decision is necessary to protect the public health or welfare of the environment from actual or threatened releases of contaminants into the environment.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis.
- environmental parameter measurement.
- fate and transport modeling.
- exposure parameter estimation.
- toxicological data.

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9 In some cases, both PCB Aroclors and PCB congeners were analyzed for the same media (e.g., fish tissue). In the BHHRA, risks were calculated for both total PCB Aroclors and PCB congeners according to EPA practice of assessing mixtures of dioxins/furans and PCBs that exhibit dioxin-like toxicity on the basis of their predicted toxicities (TEQ) relative to what is known about the toxicity of 2,3,7,8-tetrachlorodibenzo(p)dioxin (TCDD). Twelve PCB congeners and seventeen dioxin/furan congeners have been assigned 2,3,7,8-TCDD toxic equivalence factors (TEF) according to the 2005 World Health Organization (WHO) toxic equivalence (TEQ) weighting scheme for mammals and the Van der Berg et al. weighting schemes for fish and birds. Within a fish tissue or surface water sample, detected concentrations of the twelve PCB congeners with dioxin-like toxicity were multiplied by the congener-specific TEF, and the sum of the adjusted concentrations was calculated as “TCDD TEQ (PCBs).” The noncancer hazards and cancer risks posed by TCDD TEQ (PCBs) were comparable (within an order of magnitude) to those from total PCB Aroclors indicating the Aroclor data is sufficient for predicting risk. Therefore, only risks and hazards from PCB Aroclors are presented in Tables 5 and 6. Consult the BHHRA in the administrative record for additional information.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled. This is particularly notable for fish tissue sampling, which can be highly variable due to environmental factors (e.g., climate variation that can affect water depth, temperature, size of home range, life cycle, food source, etc.) that are not site-related. Furthermore, variability in environmental sampling can be accounted for with statistical methods of evaluating data; however, fish tissue sample quantities tend to be small in number compared to sediment or surface water sample data, making statistical methods less useful.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations near the site, and is highly unlikely to underestimate actual risks related to the site.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the BHHRA.

Ecological Risk Assessment

The overall goal of the ERA was to evaluate whether adverse effects to ecological receptors (*i.e.,* organisms and their respective habitats) are occurring or may occur as a result of exposure to one or more stressors, currently and in the future, in the absence of remedial action. The ERA, which served to update and refine the EPA’s 1997 preliminary ERA and 2008/2009

Reassessment, consisted of a screening-level evaluation and baseline ERA. As such, the ERA incorporated components of Steps 1 through 8 of the EPA's Ecological Risk Assessment Guidance for Superfund. The objectives of the ERA were to: identify and characterize existing ecological resources/habitats and resource values (quality/quantity of the resources) within the study area; identify biological receptors that may utilize affected habitats within the study area; evaluate the potential acute, chronic or bioaccumulation effects resulting from exposure to contamination related to the former CDE facility within the study area, currently and in the future in absence of remedial action; and provide a basis to evaluate the ecological suitability/impacts of selected remedial alternatives with respect to both short-term and long-term successes.

Problem Formulation - Problem formulation serves to establish the goals, breadth, and focus of the risk and is based on the current understanding of the area and information collected during the RI process. Appropriate assessment and measurement endpoints were selected based on the environmental setting and ecological conceptual site model. Assessment endpoints are any adverse effects on ecological receptors (i.e. plant and animal populations and communities) that may be present in or utilize the stream channel or adjacent floodplains within the study area. Measurement endpoints can be measures of effect (i.e., changes in community structure) on assessment endpoints, or they can be measures of exposure (e.g., chemical concentrations in soil compared to screening ecotoxicity values), used to infer the potential for adverse effects to communities and the ecosystem in question.

Ecological receptors are exposed to contaminants of potential ecological concerns (COPECs) in abiotic media through direct contact and incidental ingestion of soil and sediment as well as through ingestion of COPECs bioaccumulated into the plant and animal tissue that make up their diet.

The overall structure and function of the stream corridor was assessed through the following community-based and population-based assessment endpoints.

- Benthic invertebrate community - long-term maintenance of survival, growth, and reproduction of the benthic invertebrate community.

- Aquatic life community – long-term maintenance of survival, growth, and reproduction of the aquatic life community, and in particular the fish community.

- Terrestrial plant community - long-term maintenance of a healthy and diverse plant community.

- Soil invertebrate community - long-term maintenance of survival, growth, and reproduction of the soil invertebrate community.

- Semi-aquatic bird and mammal populations - long-term maintenance of the survival, growth, and reproduction of semi-aquatic bird and mammal populations within several feeding guilds that inhabit/utilize the stream corridor.

- Terrestrial bird and mammal populations - long-term maintenance of the survival, growth, and reproduction of terrestrial bird and mammal populations within several feeding guilds that inhabit/utilize mainly the floodplains of the stream corridor.

A variety of wildlife species were selected as representative of semi-aquatic herbivorous, insectivorous, omnivorous, and piscivorous birds and mammals and terrestrial herbivorous, insectivorous, omnivorous, and carnivorous birds and mammals which have been documented or are likely to be present within the Study Area.

Three lines of evidence were used for the community-based measurement endpoints: 1) measured chemical concentrations in abiotic media compared with media screening concentrations protective of receptors in direct contact with those media, 2) measured chemical concentrations in biota tissue compared to critical body residues (CBRs), and 3) sediment toxicity testing and estimated chemical concentrations in fish eggs compared to critical fish egg residues. Two lines of evidence were used for the population-based measurement endpoints: 1) food web accumulation modeling in conjunction with toxicity reference values (TRVs) and 2) estimated chemical concentrations in bird eggs compared to critical avian egg residues.

Exposure and Effects Analysis – The magnitude of exposure and the relationship between exposure and the potential for adverse effects for both the screening-level and baseline exposure and effects analyses were conducted. COPECs were first selected based on comparison of chemical concentrations in abiotic media to ecological screening values (ESVs). The hazard quotient (HQ) approach *(i.e.,* ratio of maximum detected concentration to ESV) was used in a screening-level risk calculation step to identify chemicals with the potential for adverse effects. The lists of COPECs in abiotic media for each exposure unit, identified on Figure 2, were then refined, following EPA guidance, based on frequency of detection and concentration, comparison to reference areas, and bioaccumulation potential.

The baseline analysis evaluated exposure to ecological receptors and identified measures of toxicity used to characterize the potential for adverse effects for the measurement endpoints. Multiple lines of evidence were evaluated to assess: 1) direct exposures to primary and secondary trophic level receptors (*e.g.,* aquatic invertebrates, fish, terrestrial plants, and soil invertebrates, 2) bioaccumulation into tissues of secondary trophic level organisms, and 3) food-web transfer of bioaccumulative COPECs to higher trophic level organisms.

Exposure point concentrations (EPCs) were determined for the risk assessment data sets for surface water, surface sediment, surface soil, whole body predatory and bottom-feeding fish, Asiatic clams, crayfish, and small mammals. Concentrations of total PCBs in terrestrial earthworm tissue were estimated using EPCs in surface soil and a site-specific soil-to-earthworm bioaccumulation factor derived from the soil bioaccumulation tests. Estimated concentrations in earthworms were then used to evaluate dietary exposure in terrestrial insectivorous food web models. Concentrations of refined COPECs in aquatic and terrestrial plants were estimated using EPCs in surface sediment or surface soil and literature-derived sediment-to-plant or soil-to-plant bioaccumulation factors. Estimated concentrations in plants were then used to evaluate dietary exposure in semi-aquatic and terrestrial herbivorous food web models.

The results of acute and chronic whole sediment toxicity tests on *Hyalella azteca* and *Chironomus tentans* conducted during the OU4 RI were used as another line of evidence in assessing the potential for adverse effects to benthic invertebrates.

Residue-based evaluations provided additional lines of evidence in assessing the potential for adverse effects to benthic invertebrates, fish, and birds. The tissue residue evaluation was limited to bioaccumulative chemicals detected in fish and invertebrate tissue since this approach is most relevant to chemicals accumulated by aquatic biota via dietary and direct contact exposures.

For the population-based assessment, intakes of bioaccumulative

COPECs based on total exposure from incidental ingestion of sediment/soil ingestion of surface water, and ingestion of dietary/prey items of each representative wildlife species were estimated. The exposure parameters necessary to calculate COPEC intakes for the representative wildlife receptor species were derived from literature. Home ranges were evaluated in relation to the area of each exposure unit and area use factors were calculated by dividing the exposure unit area by the home range size for each species.

Risk Characterization - The HQ method was used for all lines of evidence except toxicity and bioaccumulation testing to estimate and describe risk. The HQ is expressed as measure of exposure divided by measure of effect. The measures of exposure include measured COPEC concentrations in abiotic and biotic media, estimated COPEC concentrations in biotic media, and estimated COPEC intakes in wildlife. The measures of effect included media-specific ESVs, CBRs, and wildlife TRVs. HQs for both low (NOAEL-based) and high (LOAEL-based)[10] measures of effect were calculated for the tissue residue evaluation and the food web modeling. HQs were generally interpreted as follows:

- An HQ_{noael} less than 1 indicates that toxicological effects and potential risk are likely not occurring.
- An HQ_{noael} greater than 1 and an HQ_{loael} less than 1 indicates that toxicological effects and potential risk may occur.
- An HQ_{loael} greater than 1 indicates that toxicological effects and potential risk are more likely to occur.

The following conclusions regarding the potential for adverse health effects from exposure to site-related COPECs were made based on the evaluation of the multiple lines of evidence for each assessment endpoint:

- **Protection of Benthic Invertebrates:** Based on four lines of evidence, there appears to be a moderate risk to benthic invertebrates in Bound Brook. Potential risk to benthic invertebrates may be associated with cis-1,2-DCE, PCBs, total TCDD TEQ (PCBs) and vinyl chloride in porewater; and vinyl chloride in surface sediment in exposure unit BB5 and total PCBs in surface sediment in BB2, BB3, BB4, BB5, and BB6 (see Figure 2).

- **Protection of Aquatic Life (Fish):** Based on three lines of evidence, there is potential for adverse health effects in aquatic life associated with cis-1,2-DCE, vinyl chloride, total PCB congeners,

10 NOAEL is the no observed adverse effect level and LOAEL is the lowest observed adverse level.

and TCDD TEQ (PCBs) in porewater/surface water. Total PCB Aroclor concentrations in predatory and bottom-feeding fish whole body tissue indicate a potential for adverse health effects.

- **Protection of Semi-Aquatic Birds and Mammals:** Based on two lines of evidence, dietary exposure to total PCB Aroclors and TCDD TEQ (PCBs) in semiaquatic insectivorous and piscivorous birds and piscivorous mammals may be associated with adverse health effects, particularly in exposure units BB2, BB3, BB4, BB5, BB6, and SL. Dietary exposure to total PCBs Aroclors and TCDD TEQ (PCBs) in some semi-aquatic insectivorous mammals may be associated with adverse health effects, particularly in BB2, BB3, BB4, BB5, and BB6.

- **Protection of Terrestrial Plants and Invertebrates:** Based on one line of evidence for each receptor population, it is not likely that PCBs in surface soil are associated with wide-spread adverse health effects in terrestrial plants and invertebrates throughout the Bound Brook floodplains. Plant uptake of PCBs is considered to be negligible due to the large molecular weight and strong sorption of PCBs to organic matter and while accumulation in the tissues of soil invertebrates provides direct evidence of bioavailability, bioaccumulation alone is not an indication of adverse health effects.

- **Protection of Terrestrial Birds and Mammals:** Based on two lines of evidence, dietary exposure to PCBs based on site specific bioaccumulation in soil invertebrates may be associated with adverse health effects in terrestrial insectivorous birds and mammals.

A summary of the ERA for each receptor can be found in Table 7.

Basis for Action

The response action selected in this Record of Decision is necessary to protect public health or the environment from actual or threatened releases of hazardous substances from the site into the environment. A response action is necessary for the site because:

- **Human Health Risk:** The risk of an individual developing cancer or noncarcinogenic effects related to exposure to contaminants at the site exceeds the acceptable risk range identified in the NCP. Specifically, direct-contact exposure to contaminated sediments and floodplain soils, along with fish consumption risks, exceed CERCLA risk thresholds of an excess cancer risk of 1×10^{-4} and a noncancer HQ of 1.

- **Ecological Risk:** Risks to ecological receptors exceed CERCLA risk thresholds. PCBs, TCDD TEQ (PCBs), cis-1,2-DCE, and vinyl chloride were determined to present risks to benthic invertebrates and aquatic life (fish) because of concentrations in surface sediments and pore water. Risks were also found from PCB Aroclors and TCDD TEQ (PCBs), through dietary or bioaccumulative effects, to semiaquatic and terrestrial birds and mammals.

REMEDIAL ACTION OBJECTIVES

Based on the site-specific human health and ecological risk assessment results, human health and ecological risk is shown for PCBs in fish throughout the entire study area. The sediments and floodplain soils are the primary source of the elevated fish tissue PCB concentrations. Furthermore, two source areas that pose an ongoing threat of release have been identified: groundwater discharging to surface water, and the capacitor debris identified in the banks of the brook adjacent to the former CDE facility.

PCBs in sediments, soil and debris pose an unacceptable risk through direct contact. These direct contact risks are predominantly in exposure units BB3, BB4 and BB5, located from New Market Pond to the former CDE facility. Other contaminants were also identified under the various recreational, residential and worker direct contact exposure scenarios and considered in the BHHRA, including benzidine, dieldrin, heptachlor epoxide, and select metals. However, given the extent of the PCBs found in these media, a response action that addresses PCBs is expected to address these other contaminants as well.

PCBs were also the primary COPEC for ecological receptors for sediments and soil. In addition, the groundwater releasing to surface water, which acts as an ongoing source of PCBs to the brook, also discharges cis-1,2-DCE and vinyl chloride to porewater and surface sediment at levels that may pose unacceptable risk to benthic invertebrates in BB5.

Therefore, the following remedial action objectives (RAOs) on a component basis address the human health and ecological risks posed by PCB-contaminated sediment, soil and debris, and releases of cis-1,2-DCE to surface water, at the site:

Sediment/Floodplain Soils (SS)

- Reduce cancer risks and non-cancer health hazards to acceptable levels for people eating fish and shellfish by reducing the concentrations of PCBs in the sediments of Bound Brook.

- Reduce direct-contact and recreational exposure risks to human receptors to acceptable levels by reducing the concentrations of PCBs in the sediments and floodplain soils.
- Reduce the risks to ecological receptors to acceptable levels by reducing the concentrations of PCBs and VOCs in the sediments and floodplain soils, allowing recovery of fish population.
- Reduce the migration of PCB-contaminated sediments and floodplain soils from upstream areas, including areas below the New Market Pond dam.

Capacitor Debris (CD)

- Reduce or eliminate the direct-contact threat associated with contaminated soil and debris, including capacitors and capacitor parts in the capacitor debris area to levels protective of current and reasonably anticipated future land uses. The most conservative land use anticipated for the site would be a future recreational user.
- Reduce the risks to ecological receptors by removing or preventing direct contact with concentrations of PCBs in the capacitor debris area.
- Prevent contaminant migration to sediments and surface water.
- Remove, treat, or contain principal threat waste to the extent practical.

Groundwater Discharge to Surface Water (GW)

- Prevent migration of contaminated groundwater above acceptable surface water quality standards to the surface water and sediments.

Municipal Waterline (WL)

- Ensure protectiveness of the OU2 and OU4 remedies by mitigating the potential for failure of the municipal waterline present below the OU2 cap.

REMEDIATION GOALS

Sediments and Floodplain Soils - EPA has identified 1 mg/kg PCBs as the remediation goal for sediments and floodplain soil of OU4. This remediation goal is selected based upon the following information:

- For Bound Brook sediments, a site-specific, risk-based calculation of 10^{-6} incremental lifetime cancer risk associated with a human direct contact identified a remediation goal of 1 mg/kg. (The most conservative calculated remediation goal for direct contact concentration associated with a non-cancer hazard (that achieves an HI of 1) in sediments was 13 mg/kg.)
- EPA developed a site-specific "resident-parklands" land use, which identifies conservative and representative land use for exposure to the floodplains of OU4. This exposure scenario for a resident child would yield a 10^{-6} incremental lifetime cancer risk-based remediation goal of 0.76 mg/kg, and a noncancer-based remediation goal of 2.6 mg/kg.
- New Jersey's promulgated nonresidential direct-contact cleanup criterion for PCBs is 1 mg/kg. While not an ARAR for the sediments, New Jersey has identified 1 mg/kg the appropriate standard for the floodplain soils.

Furthermore, EPA has identified a PCB concentration of 0.25 mg/kg as the remediation goal for sediments to address human consumption of fish tissue and ecological endpoints. This remediation goal will be achieved through active remediation to 1 mg/kg, followed by long-term monitored natural recovery. This 0.25 mg/kg remediation goal is selected based upon the following information:

- Risk-based human health concentrations were developed first as PCB concentrations in fish tissue that would allow for consumption of self-caught fish from the Bound Brook without incurring a cancer risk above 10^{-6} and a noncancer health hazard above 1, EPA's goal of protection. Protective concentrations in tissue were also developed for a cancer risk of 10^{-4}, which is typically the level that requires remedial action at a site. In the BHHRA, protective concentrations in fish tissue were calculated based on the site-specific adult/child consumption rates (23.2 g/day for an adult and 7.75 g/day for a child) of bottom-feeding fish (such as carp and white sucker) and predatory fish (such as bluegill sunfish and smallmouth bass). The adult consumption rate is equivalent to roughly 37 eight-ounce fish meals per year.
- The NCP identifies a 10^{-6} cancer risk level or a hazard quotient of 1 as the goal of protection for determining

remediation goals for alternatives when ARARs are not available or are not sufficiently protective. EPA has concluded that a 10^{-6} cancer risk and hazard quotient of 1 level for the fish consumption exposure pathway cannot be attained through remediation, given the site's urban setting and the ubiquity of PCBs in the environment, but that a remedy that includes active remediation and natural recovery provides the best conditions for eventually achieving protective levels within EPA's risk range of 10^{-4} and 10^{-6} and reduction of the hazard quotient to 3 for the stream corridor[11].

- A range of preliminary remediation goals in sediments were calculated by estimating the sediment conditions that would be necessary to achieve the risk-based fish tissue concentrations discussed above. These values ranged from 0.21 to 0.38 mg/kg: 0.21 mg/kg is the 10^{-4} cancer risk for the adult/child consumption of bottom-feeding fish and 0.38 mg/kg is the 10^{-4} cancer risk for the adult/child consumption of predatory fish (See Table 10)[12].
- Assuming recent stream deposition patterns continue, after remediation of areas exceeding 1 mg/kg, it is expected that natural recovery would reduce post-remediation PCB sediment concentrations from 1 mg/kg to 0.25 mg/kg in two half-lives, or about 100 years, which is within EPA's 10^{-4} risk range, based upon the assessment discussed above.
- The ecological endpoints associated with PCB exposures generally support a remediation goal of 1 mg/kg and support an action that achieves a protective level in benthic invertebrates, semiaquatic birds and semiaquatic mammals over time, through natural recovery.

Additional risk-based tissue concentrations were developed assuming 12 eight-ounce adult fish meals per year, for use as an interim remediation milestone (see Table 11). This interim remediation milestone represents a contaminant level in fish tissue that will be used during monitoring after remedy

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11 PCB concentrations were collected from the two reference sites, Ambrose Creek and Lake Nelson. Sediment samples (Ambrose Creek and Lake Nelson combined) ranged from 0.0026 mg/kg to 0.064 mg/kg, and floodplain soils from Ambrose Creek ranged from 0.029 to 1.59 mg/kg. These are considered representative anthropogenic background in waterways in this part of Middlesex County. Furthermore, the average sediment concentration of the detected PCBs for Bound Brook upstream of the CDE site is 0.15 mg/kg.

12 At this time, it is unclear whether a hazard quotient of 1 can be achieved in fish tissue, given the site's urban setting and the ubiquity of PCBs in the environment. The Agency is providing the calculated hazard quotient values as well, for monitoring purposes, but has developed its sediment remediation goal (0.25 mg/kg) on the basis of a 10^{-4} cancer risk.

implementation to evaluate if contaminant concentrations in fish tissue are decreasing as expected. It is expected that as fish tissue levels decrease, EPA will be able to recommend to NJDEP that institutional controls be adjusted to allow for increased consumption rates.

Other chemicals of concern (COCs) were also identified in sediments and floodplain soils that also contributed to ecological or human health risks, in particular dioxin-like PCB congeners and benzidine. The ecological risk-based remediation goal for total PCBs of 1 mg/kg was derived under the assumption that remediation of total PCBs will reduce the levels of PCB congeners with dioxin-like toxicity to a protective level as well. The 2014 resampling for benzidine found that this chemical was co-located with PCBs in a pattern that suggested it to be a site-related constituent, and that addressing total PCBs to 1 mg/kg would also address benzidine. A site-specific, risk-based remediation goal of 0.1 mg/kg has been identified for benzidine.

Groundwater - For discharge of groundwater to surface water, the RAO leads to a preventive goal of eliminating the potential for PCB releases to surface water through a groundwater transport pathway. VOC transport to surface water is also occurring (primarily cis-1,2-DCE, a degradation byproduct of TCE), with some limited, localized exposure concerns, but the VOCs mobilize the PCBs, and it is the PCBs, and not the VOCs themselves, that are the primary concern of this component of the remedy. Thus, the remedial alternatives developed for OU4 considered both VOCs and PCBs, with the goal of eliminating PCB loading into stream sediments and surface water. Based upon site-specific modeling, even low levels of PCB releases through this pathway could result in unacceptable exposures in sediments and surface water if perpetuated over the long term. The remediation goal for this groundwater pathway would, therefore, be evaluated in the same way, by preventing releases to surface water that would result in sediment concentrations in excess of the sediment remediation goal for fish consumption of 0.25 mg/kg.

Capacitor Debris - This area is made up of floodplain soils located between the OU2 cap and Bound Brook, so the remediation goal for addressing this area is the same as for the floodplain soils, 1 mg/kg PCBs. This area, in close proximity to surface water, also contains large quantities of capacitor debris and has been identified as PTW, given the high concentrations of PCBs. Based upon EPA's *Guidance on Remedial Actions for Superfund Sites with PCB Contamination*, for sites in industrial areas, PCBs at concentrations of 500 mg/kg or greater will generally constitute a principal threat, and this was EPA's PTW threshold for OU2. For sites in residential areas, principal threats will generally include soils contaminated at concentrations greater than 100 mg/kg PCBs. For the capacitor debris areas in the soils outside of the boundaries of the former facility, as per EPA’s 1990 PCB guidance, EPA is using the more conservative guideline of 100 mg/kg PCBs to define PTW for OU4, as opposed to the 500 mg/kg value used for OU2 since the areas to be remediated are not on the part of the property subject to industrial use. The 100 mg/kg PTW threshold was also used for the Woodbrook site. The difference between 100 mg/kg and 500 mg/kg is expected to have little effect on the cost of the capacitor debris alternatives, because EPA expects that there is little difference in volumes between these two values.

DESCRIPTION OF ALTERNATIVES

As indicated above, EPA has divided the OU4 remedy into four distinct components:

- **Sediment/Floodplain Soils (SS) Alternatives** - Areas of the Bound Brook and floodplains, inclusive of New Market Pond, with elevated PCBs. See Figure 3.
- **Capacitor Debris (CD) Alternatives** – This area includes the area of the floodplain adjacent to OU2 (former CDE facility), a subset of the floodplain soils subject to special consideration because of the elevated levels of PCB contamination in the soil and capacitor debris in this area. See Figure 4.
- **Groundwater (GW) Alternatives** - An area of contaminated groundwater conservatively estimated at 1,600 linear feet of stream channel near the former CDE facility extending downstream where contaminated groundwater discharges to surface water.
- **Waterline (WL) Alternatives** – The 1,700 foot waterline that extends through the former CDE facility below the OU2 cap and under Bound Brook. Options for addressing this municipal waterline were evaluated since it has the potential to threaten the protectiveness of both OU2 and OU4 remedies. See Figure 5.

The CD and GW alternatives address ongoing sources releasing to Bound Brook, so the SS alternatives assume that CD and GW alternatives have been implemented first. All costs are expressed as net present value. The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction.

Description of Sediment/Floodplain Soils (SS) Alternatives

Bound Brook sediments and floodplain soils outside the CD areas contain PCB concentrations ranging up to, and in very limited cases exceeding, 100 mg/kg, near the former CDE facility. Because PCB levels in excess of 100 mg/kg are infrequent in sediment and floodplain soils outside of the former industrial facility property boundaries, EPA considers these isolated areas "low-level threat" wastes, and considered removal and capping options, but not treatment.

The "Reaches:" The FS divided the study area sediments and their adjacent floodplains into sections, or "reaches," as follows (also identified in Figure 3):

- Reach 1 was divided into 1A and 1B. Reach 1A is upstream of the former CDE facility in Bound Brook, and Reach 1B is upstream within Cedar Brook, including Spring Lake, and in areas outside the limits of Bound Brook flooding.
- Reach 2 includes the section from RM 6.55 (adjacent to former CDE facility) to New Market Pond.
- Reach 3 includes New Market Pond.
- Reach 4 includes all the areas downstream of New Market Pond.

The RI showed that Bound Brook is characterized by shallow bedrock, relatively thin layers of unconsolidated sediment, and shallow base flow water depths; therefore, excavation or dredging options are more appropriate for contaminated sediment than capping. As discussed below, capping is considered for contaminated floodplain soils but EPA has concerns regarding the performance of a cap during flood events, and even under base flow drainage conditions in portions of the floodplain.

Furthermore, the areas of Middlesex and Somerset Counties adjacent to Green Brook, including the Bound Brook corridor, are stressed by a lack of stormwater drainage capacity. Under the Water Resources Development Act of 1996, the U.S. Army Corps of Engineers (USACE) and its non-federal sponsor, NJDEP, are implementing a long-term plan to address flooding in the area, through the Green Brook Flood Control Project.[13] The Green Brook Sub Basin includes portions of 13 municipalities and covers 65 square miles. In consultation with the Green Brook Flood Control Commission, USACE and NJDEP are implementing a multi-year project to mitigate flooding, including flood walls and levees, stream modifications, and dry detention basins. Modifications to Bound Brook above New Market Pond are in the early planning stages and still some years away; however, these stakeholders have indicated that capping would further reduce flood storage capacity, be detrimental to that project, and would likely not be supported by those stakeholders.

Three alternatives were considered:

- Alternative SS-1: No Action
- Alternative SS-2: Excavation/Dredging of Sediments and Soils with Monitored Natural Recovery
- Alternative SS-3: Excavation/Dredging of Stream Sediments, Excavation with Capping of Floodplain Soils, Dredging with Capping of New Market Pond, Limited Hotspot Dredging of Depositional Areas with Monitored Natural Recovery

Alternative SS-2 would rely on dredging or excavation to remove contaminated material, followed by restoration of disturbed areas. Alternative SS-3 would include dredging or excavation in certain areas combined with capping. Both alternatives would rely on monitored natural recovery (MNR) to aid in achieving remedial objectives.

Common Elements for SS Alternatives

The remedial alternatives, except Alternative SS-1 (no action), include long-term monitoring of sediment, floodplain soils and fish tissue and institutional controls. The degree of monitoring that would be needed is different for each alternative. Alternatives SS-2 and SS-3 would both incorporate institutional controls, which are administrative and legal controls that help to minimize the potential for human exposure to contaminants, such as the fish advisory that NJDEP has already put in place. For Alternative SS-3, institutional controls consisting of restrictions on land use of capped floodplains soils would be implemented, in the form of a deed notice to prevent disturbance of capped soils. If wastes are left on the site, or if the time required to achieve the RAOs is greater than five years, five-

13 http://www.nan.usace.army.mil/Missions/CivilWorks/ProjectsinNewJersey/GreenBrookSubBasin.aspx

year reviews would be conducted to monitor the contaminants and evaluate the need for future actions.

The active remedies rely on monitored natural recovery to aid in achieving the remedial objectives that pertain to fish recovery. As noted previously, the remediation goal of 1 mg/kg PCBs is not adequate, on its own, to achieve a protective level for a 10^{-4} incremental lifetime cancer risk for fish consumption, which would require a fish tissue target range discussed in the Remedial Action Objectives section, above. EPA expects that, by addressing PCB-contaminated sediments and soils at levels in excess of 1 mg/kg and eliminating ongoing sources of contamination to the sediment (the CD areas and the groundwater discharging to Bound Brook), the OU4 remedy, including natural recovery at the rates suggested by the high-resolution coring data, will reduce contamination in fish tissue to protective levels within a reasonable timeframe, conservatively estimated at 100 years.

Alternative SS-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action to prevent potential exposure to sediment and soil contamination.

Alternative SS-2: Excavation or Dredging of Sediments and Excavation of Soils with Monitored Natural Recovery

Capital Costs	$187,300,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$30,000
Total Present Value	$177,600,000
Construction Time Frame	2 to 3 years

This alternative would remove contaminated sediment from Bound Brook and New Market Pond, and contaminated soil from the surrounding floodplain, thereby preventing human exposure and controlling impacts to the environment. Options considered for removing material consist of dredging sediments “in the wet,” or diverting Bound Brook and excavating contaminated sediments "in the dry," coupled with conventional excavation of floodplain soils. The majority of the Bound Brook contaminated sediments, an estimated 34,000 cubic yards, are located around RM 6.55 (the Twin Culverts next to the former CDE facility) and New Market Pond. The majority of the contaminated floodplain soils, identified to be located as deep as 3 feet below ground surface and estimated at 150,000 cubic yards, are located near the OU2 facility, near the confluence of Bound Brook and Cedar Brook, and adjacent to/including portions of Veteran's Memorial Park.

Two methods were considered for removing contaminated sediments - dredging and excavation:

Stream Dredging: Contaminated sediment from the brook would be mechanically dredged through the use of cranes and environmental buckets, excavators, drag line, and other equipment mounted on amphibious vehicles operating in the brook. Floodplain soils would be excavated using conventional construction equipment with appropriate controls and modifications for wetland/soft soil areas (*i.e.*, track-mounted, low pressure or high floatation vehicles). Backfill would be placed in disturbed areas to restore the streambed and floodplain to pre-removal grades, to cover and isolate dredging residuals or remaining contaminants in the soil, to provide material to reestablish habitat and surface water drainage patterns. Disturbed areas would be backfilled and regraded with material suitable for habitat restoration. Armoring would be provided as necessary to control erosion. Dredged sediments and excavated soils would be transported to a central processing site prior to shipment off-site for ultimate disposal. At the processing site, sediment and soil would be segregated based on the characteristics of the material as determined during the design phase. Sediment and floodplain soil would be processed as necessary for disposal. Processing steps would include dewatering to a moisture content required for additional processing or disposal of dredged solids. Either passive or mechanical dewatering could be used. Material characterized as hazardous or as Toxic Substances Control Act (TSCA) waste would be stockpiled separately from material classified as non-hazardous; material requiring processing prior to disposal would be stockpiled separately from material not requiring processing. The processed solids would be shipped to an off-site disposal facility.

Stream Excavation: This action would remove contaminated sediment from Bound Brook by dewatering the streambed and removing the contaminated sediment “in the dry.” Conventional excavation would be used to remove contaminated floodplain soils. Surface water flow in Bound Brook would be temporarily diverted around the active work area to allow conventional excavation of sediments under relatively dry conditions (“in the dry”), rather than dredging. Excavation of the sediment in the dry allows greater control over sediment removal because of greater access, reduces the post removal processing requirements due to the lower moisture content of the sediment, and minimizes the potential for dredging-related sediment resuspension and contaminant migration. The brook would be divided into segments based on natural boundaries at the site (*e.g.*, culverts, bridges, dams, etc.). Working segment by segment, a pumping and pipeline system would be constructed to dewater the brook. Temporary coffer dams would be installed across the brook and the surface water pumped through a temporary pipeline around the active portion of the work. Following dewatering, contaminated sediments would be removed from the bed of the brook using cranes, conventional excavators, drag line, and other construction equipment. The excavated sediment would be characterized for disposal and shipped to an off-site disposal facility. Once excavation of a segment was completed, backfill would be placed in disturbed areas to restore the streambed to pre-excavation conditions and allow for habitat restoration in the brook.

Diverting the stream and excavating sediments allows for marginally better sediment management performance during the removal, and appears to be a better fit with several of the groundwater alternatives, and is also less costly. Stream diversion and excavation was assumed, for cost-estimating purposes for this alternative. However, it is possible that a combination of excavation and dredging would be used.

While it would be technically feasible to dewater New Market Pond and excavate the sediment in the dry, this approach has a number of drawbacks, including odors and fish kills. Capturing and releasing fish up or downstream of the pond would allow the spread of PCB-contaminated fish beyond the limits of the fish advisory and increase the likelihood of consumption of the contaminated fish. For this reason, hydraulic dredging is preferred as the process for removing the sediment in New Market Pond necessary to achieve the PCB remediation goal of 1 mg/kg. Hydraulic dredging is described in more detail below in Alternative SS-3.

This alternative comprehensively addresses streambed sediments from approximately RM 6.55 (at the Twin Culverts) down to and including New Market Pond. Two depositional area hotspots have also been identified, at RM 2.48 and RM 3.03 in Reach 4, which exceed the remediation goals. These hotpots would also be addressed in this alternative, probably through dredging. Based upon the 100-foot spacing of transects during the RI, it is possible that other small depositional areas could be identified with further sampling. This Alternative includes a provision for further sampling to attempt to identify other hotspots, primarily in Reach 4 (downstream of New Market Pond), and assumes that other identified hotspots would also be removed.

This alternative includes the cleaning of the existing silt trap (located upstream of the inlet to New Market Pond). After completion of the active remedy, MNR is expected to further improve conditions in surface water and sediments such that concentrations of contaminants in fish tissue would improve to acceptable levels over time. Future maintenance of the New Market Pond silt trap is expected to be advantageous for long-term improvement of fish tissue, as this mechanism (along with New Market Pond itself) has proved to be effective at collecting contaminated sediments. Therefore, this alternative includes the periodic maintenance (through sediment dredging every five years) of the silt trap to aid in the effectiveness of MNR.

To minimize local truck traffic, the preferred method to transport soil and sediment off-site for disposal would be by rail. This would require locating a processing site with a rail spur or siding. The feasibility of constructing a dedicated rail spur at the designated sediment/soil processing site should be evaluated during the RD stage of the project. If a processing site is not available with rail access, trucks may be used.

Alternative SS-3: Excavation/Dredging of Stream Sediments, Excavation with Capping of Floodplain Soils, Dredging with Capping of New Market Pond, Limited Hotspot Dredging of Depositional Areas with Monitored Natural Recovery

Capital Costs	$165,700,000
Operation & Maintenance Costs	$638,445
Periodic Costs	$30,000
Total Present Value	$157,800,000
Construction Time Frame	2 to 3 years

This alternative would also rely on dredging or excavation for much of the contaminated material, similar to Alternative SS-2 (for example, the options for excavation or dredging of stream sediments from RM 6.55 to New Market Pond would remain unchanged), but this alternative also combines excavation or dredging with capping in several discrete areas of OU4, as described below.

Hydraulic Dredging and Capping in New Market Pond: While stream excavation is preferred for most of Bound Brook, hydraulic dredging does represent a feasible option for New Market Pond. Approximately 67 percent (71,000 cubic yards) of the contaminated sediment exceeding the PCB remediation goal is located in New Market Pond. Under Alternative SS-3, hydraulic dredging would be used for partial removal of contaminated sediment in New Market Pond, coupled with construction of an engineered cap to isolate the remaining sediments from the environment. Partial removal would entail the removal of enough material from the pond to accommodate the cap thickness without causing additional flooding, followed by construction of a sub-aqueous cap to contain residual contaminants (assumed to be a 24-inch thick sand cap). The depth of dredging would be required to be approximately 6 inches greater than the planned thickness of the cap to maintain water depth. Use restrictions would be established for the capped areas to protect the areas from unnecessary disturbance and to provide for long-term access for cap inspection and maintenance.

Consolidation/Capping of Floodplain Soils: Typical upland isolation capping consists of a soil cap a minimum of 24 inches thick, although the cap thickness may increase based on site-specific conditions. Capping would not be suitable in the portions of the floodplain bordering the streambed because of the potential for disrupting normal surface water flow patterns and the need for extensive armoring to protect the cap during high flow conditions. However, capping may be an effective alternative in portions of the broad expanses of floodplain where contamination is laterally extensive (*i.e.*, the area near the confluence of Bound Brook and Cedar Brook). This would involve fully excavating approximately 15 acres of the floodplains near the stream channel (an estimated 90,000 cubic yards), and removing an additional 25,000 cubic yards of surface soils from the remainder of the floodplain to allow for capping. The total volume excavated would be 115,000 cubic yards.

Under this approach, approximately 23 percent (35,000 cubic yards) of the contaminated floodplain soil would be left in place under a soil cap. The capped area would cover approximately 17 acres. A minimum 24-inch thick cap would be constructed over contaminants in the floodplain using standard construction equipment. The intent of the cap would be to isolate remaining contaminants in the soil from the environment and direct contact, not to control permeability or prevent leaching. The need for armoring of the isolation layer would be evaluated during the RD phase. Prior to capping, a surface water drainage plan would be developed for the area to ensure that the cap did not disrupt current flow patterns or that alternative drainage routes were available. Use restrictions would be established for the capped areas to protect the area from unnecessary disturbance and to provide for long-term access for cap inspection and maintenance.

The capping in New Market Pond and in floodplains would require long-term cap maintenance. A 30-year cap maintenance period has been used for cost-estimating purposes, but the caps would need to be maintained in perpetuity.

Depositional Area Monitored Natural Recovery: The OU4 RI identified significant areas within the brook where sediments contained contaminants at concentrations below remediation goals. For example, with few exceptions, remediation goal exceedances were not found in Reaches 1A, 1B and 4, and remedial actions will not be required in these areas. However, discrete depositional areas were identified within these generally low concentration areas (at RM 2.48 and RM 3.03), and contaminant concentrations in these discrete depositional areas were found to exceed remediation goals. Under Alternative SS-3, sediment hotspots in these discrete depositional areas would not be removed, but addressed by MNR.

Description of Capacitor Debris (CD) Alternatives

EPA defined principal threat wastes for OU4 as soil and capacitor containing debris with concentrations of PCBs in excess of 100 mg/kg located within the floodplain along the Bound Brook banks of the former CDE facility (see Figure 4). The FS identified seven remedial process options for the CD areas. EPA screened out four of the seven leaving three “best fit” remedial alternatives. EPA’s “A Guide to Principal Threat and Low-Level Threat Wastes,” November 1991, affirms EPA’s preference for permanent remedies to treat PTWs, wherever practical. Therefore, for the CD areas, the capping alternative identified in the FS was not carried forward, leaving only “no action” and treatment, excavation and disposal alternatives for the OU4 principal threat wastes. The alternatives under consideration consist of:

- Alternative CD-1: No Action
- Alternative CD-3: Full-depth Excavation, Thermal Desorption, and On-Site Burial of Residuals
- Alternative CD-4: Full-depth Excavation and Off-Site

Disposal

Both excavation alternatives (CD-3 and CD-4) involve conventional excavation of the CD areas from the sloped banks of Bound Brook adjacent to the former CDE facility using the remediation goal of 1 mg/kg, followed by filling and regrading to restore the banks, and installation of an armored layer to prevent erosion during future flood events. The Twin Culverts in the Bound Brook channel will also be removed as part of these alternatives to allow access to suspected CD areas and to mitigate the erosional areas caused by the presence of the culverts. Historically, the Twin Culverts provided rail access to the CDE facility, a function that does not appear likely in the future plans for the property; it is anticipated that they would not be replaced. Confirmatory sampling would be employed to verify adequate removal, which is expected to be required throughout the entire length of the banks previously armored by the removal action performed by EPA in 2008. The primary difference between the excavation alternatives would be the use of on-site treatment and placement of the treated waste below a cap in a disposal area located within the footprint of the former CDE facility (under the OU2 cap) for CD-3, as opposed to off-site disposal for CD-4.

Common Elements of CD Alternatives

All of the remedial alternatives except Alternative CD-1 include long-term monitoring and institutional controls to limit future land uses. The degree of monitoring that would be needed is different for each alternative. Institutional controls are administrative and legal controls that help to minimize the potential for human exposure to contaminants. For Alternative CD-3, institutional controls in the form of a deed notice to prevent disturbance of capped floodplain soils would be implemented. Similarly, for Alternative CD-4, restrictions on land use (in the form of deed notices) to prevent future residential use would be required. Five-year reviews are already required for the OU2 and OU3 remedies and would extend to this component of the OU4 remedy as well.

Alternative CD-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action to prevent potential exposure to PTW soil contamination or PCB-contaminated capacitor debris.

Alternative CD-3: Full-depth Excavation, Thermal Desorption, and On-Site Burial of Residuals

Capital Costs	$42,400,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$42,400,000
Construction Time Frame	1 year

Under this alternative, after full excavation, PTWs with PCB concentrations greater than 100 mg/kg would be treated by an on-site treatment process such as LTTD. The potential location of the treatment pad for the on-site treatment unit has not been selected at this time. The 26-acre CDE property has been designated a redevelopment zone by the Borough of South Plainfield, and EPA is supportive of putting the land back to productive use. Therefore, the location of the treatment facility may depend upon the status of the redevelopment project.

The process would begin with excavation of the contaminated soil and debris, using sheeting, coffer dams and other stream diversion techniques as necessary, followed by post-excavation sampling. The volume of material is estimated to be 31,900 cubic yards. LTTD is a physical separation process by which wastes are heated in thermal desorption units to volatilize water and organic contaminants. A carrier gas or vacuum system transports volatilized water and organics to the gas treatment system. Contaminants are removed through condensation followed by carbon adsorption or they are destroyed in a secondary combustion chamber or catalytic oxidizer. For treatment of the OU4 soils, the post-treatment target would be less than 1 mg/kg PCBs and treated material would be placed on site. Debris that could not be successfully treated would be disposed of offsite. For cost-estimating purposes, it is assumed that approximately 10 percent of the material excavated under this alternative would not need to be treated and could be placed under the cap without LTTD treatment.

Under Alternative CD-3, treated soil and debris would be consolidated into a single location (on the former CDE facility property, if appropriate) and capped with a multi-layer cap design similar to that used to remediate OU2. The FS estimate assumes that the material would be placed at the former CDE facility in a 10-acre area, which would result in a relatively thin layer (18 inches) of new waste spread over a wide area, to allow for proper drainage of the OU2 property.

This alternative would include capping and engineering controls and institutional controls to restrict land use to non-residential standards (deed notices), wetland restoration and long term Operation and Maintenance (O&M) of the cap. Since wastes would be left on-site, five-year reviews would be conducted to ensure the remedy is protective and evaluate the need for future actions.

Alternative CD-4: Full-depth Excavation and Off-Site Disposal

Capital Costs	$32,800,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$32,800,000
Construction Time Frame	1 year

Under this alternative, contaminated soil and debris would be excavated and disposed off-site at an appropriate disposal facility. The excavation would proceed as described above for Alternative CD-3; however, no on-site treatment would be conducted. Instead, all excavated material would be shipped off-site for disposal. As with Alternative CD-3, this alternative would include wetland restoration, institutional controls to restrict future land use to non-residential standards (deed notice) and a five-year review.

Description of Groundwater (GW) Alternatives

The GW alternatives would mitigate the discharge of site-related contaminated groundwater to Bound Brook adjacent to the former CDE facility. Contaminated groundwater (the subject of the 2012 OU3 ROD) is present in the bedrock matrix (as demonstrated by results of bedrock porewater analyses performed during the OU4 RI) and is discharging to the brook. The OU3 RI results, combined with numerical modeling, indicate that contaminated groundwater identified in OU3 has the potential to impact conditions in Bound Brook for many decades or even centuries to come. Therefore, the groundwater discharge has the potential to recontaminate remediated sediments in Bound Brook and continue to cause unacceptable risks to ecological receptors.

Remediation of the contaminated groundwater source itself was evaluated in OU3 and found to be technically impractical. To be protective in the long term, the groundwater remedial alternatives should be able to prevent exposure to receptors in perpetuity by preventing contaminant migration from groundwater to surface water. This was a primary factor in the development and evaluation of the GW alternatives.

The alternatives under consideration consist of:

- Alternative GW-1: No Action
- Alternative GW-2: Monitoring and Institutional Controls
- Alternative GW-3: Hydraulic Control of Groundwater
- Alternative GW-4: Permeable Reactive Barrier (PRB)
- Alternative GW-5: Reactive Cap

Under Alternative GW-2, monitoring the sediment and water quality would be performed in Bound Brook in lieu of active remediation of groundwater discharges. Alternative GW-3 consists of a groundwater withdrawal and treatment system intended to capture and treat the portion of the contaminated groundwater that would otherwise discharge into the brook as contaminated porewater. Alternatives GW-4 and GW-5 are passive treatment systems. Alternative GW-4 consists of a PRB installed in a deep trench adjacent to the brook, and Alternative GW-5 is a reactive cap installed on the bed of the brook.

Potential alternatives that were examined and determined to be impractical included damming the brook to create an impoundment deep enough to counteract the head of discharging groundwater (the inundation area would have a substantial deleterious effect on surrounding properties) and an impermeable cap in the streambed (models indicate the discharge would shift to a tributary to Bound Brook, where it would continue to cause an adverse impact on the water body). The concept of restarting the Spring Lake well field, which, when operating prior to 2003, created a downward gradient that may have reduced much of the discharge to surface water, was also considered but not retained. The owner of the well field, Middlesex Water Company, does not currently have a business interest in reactivating this system, which operated at a rate of as much as 2 million gallons per day, nearly 1,400 gallons per minute (gpm). In contrast, the pumping system required to achieve capture of the discharging site-related contaminated groundwater, as discussed in Alternative GW-3, would require only 25 gpm, and would be located only along a 1,600 foot stretch of Bound Brook in order to achieve the needed drawdown.

Common Elements for GW Alternatives

The GW alternatives (with the exception of Alternative GW-1, No Action) each include long-term monitoring to evaluate groundwater and porewater quality associated with groundwater discharge to Bound Brook. Each of the alternatives also focus only on the portion of the contaminated groundwater that discharges through the bed of Bound Brook, since the rest of the groundwater plume was addressed in the OU3 ROD. Due to the long-term back-diffusion of contaminants from the bedrock matrix and the associated contaminated groundwater discharge, each of the GW alternatives would have to be operated and maintained for the same timeframe, which is expected to be on the order of hundreds of years. Alternatives GW-4 and GW-5 both employ passive treatment technologies to achieve remedial action objectives for the groundwater discharging to Bound Brook. The difference between the alternatives is the location at which the groundwater is treated – either in a vertical trench adjacent to the brook or at the point of discharge in the bed of the brook via a reactive cap. For Alternatives GW-4 and GW-5, the collected monitoring data would be used to evaluate the frequency of media replacement required in the PRB and reactive cap, respectively, in addition to evaluating achievement of remediation goals and assessing attenuation.

Since EPA has concluded that restoration of the groundwater to beneficial uses is not practicable, EPA is invoking an ARAR waiver of groundwater and drinking water chemical-specific ARARs for an area of contaminated groundwater affected by site contaminants (that was not addressed by OU3), due to technical impracticability. This would be included as part of all the GW Alternatives.

In addition, all the GW Alternatives would require a five-year review, to be conducted to ensure that the remedy remains protective. A groundwater-use institutional control, in the form of a New Jersey Classification Exception Area (CEA), is already required as part of the OU3 remedy, which addresses the area-wide site-related groundwater contamination by documenting the area of groundwater where constituent standards cannot be met, and limiting or prohibiting installation of groundwater extraction wells within the entire designated area of contamination. An OU4 groundwater remedy would necessitate the expansion of the planned CEA to include the OU4 area as well.

Alternative GW-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	$0

Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action to prevent discharge of contaminated groundwater into Bound Brook.

Alternative GW-2: Monitoring, Institutional Controls

Capital Costs	$1,900,000
Operation & Maintenance Costs	$10,270,000
Periodic Costs (Monitoring)	$0
Total Present Value	$12,200,000
Construction Time Frame	1 year

This alternative consists of monitoring the sediment and water quality in Bound Brook in lieu of active remediation of groundwater discharges. Under Alternative GW-2, the effectiveness of MNR in achieving remedial action objectives for the groundwater discharging to the brook would be evaluated. Institutional controls such as the fish advisory already in place would be maintained to protect against human exposure in downstream areas of the brook.

Monitoring would be initially conducted on a quarterly basis, until baseline conditions are established. Once established, monitoring could be adjusted to a semi-annual or annual frequency, depending on the results. Monitoring for site-related COCs would include the following elements: porewater sampling using passive samplers, the installation and sampling of groundwater monitoring wells along the length of the impacted section of the brook (including single and nested, multi-depth wells), surface water grab samples, installation and monitoring of piezometers, and collection and analysis of sediment samples. Samples would be analyzed for PCBs and VOCs.

Alternative GW-3: Hydraulic Control of Groundwater

Capital Costs	$8,100,000
Operation & Maintenance Costs	$15,160,000
Periodic Costs (Monitoring)	$0
Total Present Value	$23,300,000
Construction Time Frame	1 year

This alternative would establish hydraulic control (containment) of the portion of the groundwater discharging from the former

CDE facility to Bound Brook. Hydraulic control of groundwater is envisioned to entail installing three vertical extraction wells on or nearby the former CDE facility property, each to a depth of approximately 75 feet bgs, and pumping the wells at a combined rate of approximately 25 gpm. The groundwater extraction well depths and total flow rate are based on preliminary results of a MODFLOW groundwater extraction simulation performed as part of the OU3 RI, and would need to be refined during remedial design (RD).

Alternative GW-3 incorporates an on-site treatment system to treat the extracted groundwater. Although the final technology selection for an *ex situ* treatment system would be deferred to the RD phase, representative process options were selected and included oil-water separation, acidification to control scaling, sediment filtration, oxidation to treat organics, catalytic filtration for metals removal, carbon effluent polishing, neutralization, and discharge to a local municipal treatment works or Bound Brook.

It is expected that Alternative GW-3 would need to be operated for decades or potentially centuries, i.e., as long as contaminants in the bedrock matrix would prevent groundwater from meeting remedial action objectives in Bound Brook. In addition to the monitoring expectations discussed in Alternative GW-2, above, a groundwater monitoring program would be established to monitor the performance of the hydraulic-control remedy and to ensure that complete hydraulic containment is achieved. Because of the duration of operation, the RD would need to include O&M requirements for the various treatment system components, and to optimize the design based on minimizing O&M costs (*e.g.*, use of solar power). The building housing the treatment components, as well as the piping connecting the various components of the system, would need to be designed for an extended operational life. Contaminant concentrations may fluctuate over time; therefore, this system would need to be flexible enough to allow for use of different treatment technologies, as needed.

Alternative GW-4: Permeable Reactive Barrier

Capital Costs	$18,700,000
Operation & Maintenance Costs	$3,780,000
Periodic Costs (Monitoring)	$4,580,000
Total Present Value	$27,100,000
Construction Time Frame	1 year

Alternative GW-4 consists of a PRB in a trench located on or adjacent to the former CDE facility to intercept and treat contaminated groundwater prior to discharge to Bound Brook. A PRB passively treats contaminated groundwater as it flows through reactive media installed within the trench. Primary design factors for the PRB include: the depth to bedrock, the required depth and breadth of the groundwater capture zone, the residence time required for treatment of the contaminants to desired concentrations, and the treatment media to be installed. On the basis of preliminary modeling results and site conditions documented by the OU3 RI, it is anticipated that the PRB would be approximately 1,600 feet in length, running along the northeast and northwest boundary of the former CDE facility adjacent to the brook.

According to data collected during previous investigations in OU2 and OU3, bedrock is present at depths between 0 to 10 feet bgs at the former CDE facility. Groundwater modeling suggests that the PRB trench would need to be 50 to 75 feet deep to capture the groundwater discharging to the brook. To excavate a trench to that depth, controlled blasting would be used to create a rubble zone in the bedrock. After blasting, if the trench walls were stable, the rubble could be removed. If the trench walls were not stable, it might be necessary to backfill the trench (to stabilize the area) with a combination of treatment media and appropriately selected fill material. Unstable conditions in the trench could impact the cost of subsequent media change-outs and potentially, the effectiveness of the system.

Controlled blasting would increase the bedrock permeability and would be expected to modify the flow paths in the bedrock aquifer in a manner advantageous to the groundwater treatment objective by creating a zone of higher permeability around the trench which should encourage the flow of contaminated groundwater through the treatment media.

The reactive media in the trench would be selected based on the primary constituents of concern and a treatability study conducted during the RD. Because it is anticipated that groundwater will continue to discharge contaminants to the brook for decades or longer, the PRB would need to be designed to be maintained and operated over a very long period. Over time, the reactive media in the PRB would be consumed and require replacement.

During the RD, approaches to facilitate media replacement would be evaluated. These may include the use of panels, canisters, or reactors containing treatment media that can be inserted and removed readily; injection of treatment media into the rubble zone created by the blasting; or removing/replacing the rubble zone and directly backfilling treatment media into the trench. The selection of the appropriate option would be finalized based on conditions in the trench. Panels or canisters would allow for more ready replacement of spent media, but are likely to have less treatment capacity and require more frequent change-out. Backfilling the trench with the media would likely result in greater treatment capacity between change-outs, but each change-out would be more expensive and labor-intensive. Given the depth of the trench, cranes and booms would be required for either option. The need for equipment access over the life of the treatment process could affect development in a portion of the former CDE facility property. A monitoring program would be required to evaluate the effectiveness of the treatment and detect the need for reactive media replacement.

Alternative GW-5: Reactive Cap

Capital Costs	\$13,500,000
Operation & Maintenance Costs	\$3,230,000
Periodic Costs (Monitoring)	\$5,370,000
Total Present Value	\$22,100,000
Construction Time Frame	< 1 year

Alternative GW-5 consists of installation of a reactive media layer in the bed of Bound Brook to intercept and passively treat contaminated groundwater at the point of discharge. During RD, the optimal sequence for installation of the reactive cap in relation to the remediation of the soil and sediment, and the capacitor debris areas, would be determined.

Constructing a reactive cap could require diverting the water in the brook via coffer dams and a pipeline diversion system (using procedures similar to those discussed for SS-2) and over-excavating the streambed within the known discharge zone to an appropriate depth, such that the top of the reactive cap (including armoring layer) would be at the same grade as the current streambed. Bedrock outcrop areas could require blasting to accommodate the thickness of the reactive cap, although data from the remediation of OU2 suggests that the upper portion of bedrock is weathered and likely could be scraped off using conventional excavators.

The reactive material would be installed in manufactured 'blankets', with the reactive media sandwiched between two layers of filter fabric. Use of media blankets would facilitate regular removal and replacement of the reactive media. Following installation, the media blankets would be covered with a sand layer to allow habitat to be reestablished in the area. Armoring would be provided for the cap to protect it from erosion during high flows.

A pilot study would be required to determine the required cap thickness. Detailed measurements of the historical and current brook flows would be required to establish locations within the cap alignment needing additional armoring or additional thickness of the sand layer. Porewater flux monitoring, along with multiple rounds of groundwater monitoring, both for the pre- and post-treated groundwater, would be conducted as part of a pilot study.

Based on the results of particle tracking and sediment transport modeling conducted for the OU4 RI, the cap would likely be placed between RM 6.2 and RM 6.5 of Bound Brook, a distance of approximately 1,600 linear feet, from the twin culverts to the Lakeview Avenue Bridge. The cap would encompass the entire width of the brook, extending up the side slopes, and would be anchored along the shore line.

It is anticipated that the reactive cap would need to remain in place in perpetuity. The life of the treatment media is subject to the contaminant load and the groundwater flux, and would require replenishment as part of its O&M cycle. A porewater monitoring program would be established to verify that the reactive cap is treating contaminants in the groundwater prior to discharge to surface water. Contaminant levels in the porewater would be evaluated during the RD to indicate when media change out is required. Alternative monitoring approaches may also be introduced during the RD to monitor system performance.

Description of Waterline (WL) Alternatives

Approximately 1,700 feet of 36-inch diameter ductile iron pipe crosses beneath the former CDE property (see Figure 5). This high pressure potable water transmission line was uncovered during excavation of OU2, and although it was not physically damaged during the excavation process, the waterline ultimately developed a leak during that remedial activity. Although the pipeline was repaired, as the waterline ages, it is possible that it will leak again or break. Depending on the extent of the leak or break, the water could impact the integrity and protectiveness of OU2 soil remedy and release contaminants to

Bound Brook thereby threatening the OU4 remedy.

To address this potential threat to the OU2 and OU4 remedies, the alternatives under consideration consist of:

- Alternative WL-1: No Action
- Alternative WL-2: Waterline Monitoring System, Replacement in Existing Easement As Necessary
- Alternative WL-3: Waterline Replacement in New Easement

Alternative WL-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action to address the concerns associated with the existing high pressure waterline below the former CDE facility property.

Alternative WL-2: Waterline Monitoring, Replacement as Necessary

Capital Costs	$500,000
Operation and Maintenance Costs	$100,000
Periodic Costs (Monitoring)	$3,500,000
Total Present Value	$4,100,000
Construction Time Frame	< 1 year

Alternative WL-2 consists of leaving the waterline in its current location and installing a pipeline monitoring system to detect leaks in the segment of the pipeline crossing the former CDE facility property. Pipeline monitoring systems for single walled pipes, such as the existing water main, typically involve monitoring the pressure within the pipe. If the pressure drops outside of a designated range, an alarm sounds indicating a leak. The system can either be designed to automatically shut down the segment of the pipeline that the monitoring system indicates has a leak, or the decision on action can be deferred to a designated responder.

This alternative would require the following elements:
- Install a pipeline monitoring system to detect potential leaks in the waterline.
- Install a control system that would allow the portion of

the pipeline crossing the former CDE facility property to be shut down in the event of a leak.
- Install an alarm and emergency alert system to alert a designated person or team tasked with responding to a leak.
- Establish a program for addressing future leaks.
- Review the proposed development plans for the former CDE facility property to assess the ability to replace the pipeline in the future once the site has been developed.

This alternative assumes that pipeline leaks would lead to replacement of the waterline in year ten (10) of the estimate, in a location parallel to its current location crossing the former CDE facility property. At that time, it would take a number of months to design and construct a new pipeline in the event that was necessary due to a leak, during which time the main would need to remain in operation. This would necessitate temporary repairs to the pipeline which could impact operations on the property as well as expose site users to contaminants.

Alternative WL-3: Waterline Replacement in New Easement

Capital Costs	$8,900,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$8,900,000
Construction Time Frame	< 1 year

This alternative consists of relocating the existing waterline to a new easement that does not cross the former CDE facility property. Alternative WL-3 would entail constructing a similarly sized, new pipeline in the public right-of-way (ROW). The new pipeline route would need to be determined during the RD; a proposed route was developed by New Jersey American Water (NJAW) for evaluation purposes. Modifications to the existing distribution system would be done as necessary to accommodate the changes to the system configuration.

This alternative would require addressing the following elements:
- Negotiations with the Borough of South Plainfield regarding construction of the pipeline in the public ROW.
- Negotiations with the owner of the railroad line (Conrail) regarding a jack and bore under their tracks at two locations.
- Evaluation to establish compliance with regulatory requirements for construction of the pipeline under Bound Brook.
- Modifications to the existing pipeline system to

accommodate the proposed changes in the pipeline configuration.

- Abandoning the existing pipeline in place by disconnecting the pipeline from the water distribution system at both ends. The existing pipeline would be grouted closed at both ends.

COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in CERCLA §121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial response measures pursuant to the NCP, 40 CFR §300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of each of the individual response measures per remedy component against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each response measure against the criteria.

Threshold Criteria *– The first two criteria are known as "threshold criteria" because they are the minimum requirements that each response measure must meet in order to be eligible for selection as a remedy.*

1. Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

Sediment and Floodplain Soils (SS)

Alternative SS-1, No Action, would not be protective of human health and the environment since it does not include measures to prevent exposure to contaminated sediment and soil.

Alternatives SS-2 and SS-3 would reduce the cancer risk to be within EPA's risk range and noncancer hazards to be at or below a hazard index of 1 for direct contact and, coupled with MNR, to reach protective levels for fish consumption and environmental protection within a reasonable period of time; therefore, they are protective. Alternative SS-2 (Dredging/Excavation of Sediments, Excavation of Soils) would mitigate the exposure risks in Bound Brook and the associated floodplain areas through the removal of contaminated sediment and soil. Alternative SS-3 (Dredging/Excavation with Capping) would mitigate the exposure risks in Bound Brook and the associated floodplain areas through the removal of contaminated sediment and soil combined with capping and the use of MNR for depositional area hotspots. For both alternatives, surface water quality would be improved by the removal of the contaminant source and the cleaning of the existing silt trap (located upstream of New Market Pond).

Alternative SS-3 would leave some amount of the contaminants in place, isolated underneath a barrier cap in New Market Pond and in portions of the floodplain soils that do not immediately border the brook. This alternative would be protective only if the caps were maintained in perpetuity.

Alternative SS-3 would rely on MNR to address two known, and possibly other, depositional areas containing concentrations of PCBs exceeding remediation goals in Reach 4 (downstream of New Market Pond). More broadly, Alternatives SS-2 and SS-3 remediate sediments that exceed 1 mg/kg PCBs, and would rely on MNR to further reduce sediment and surface water concentrations to levels that will allow fish tissue to recover to protective levels.

Capacitor Debris (CD)

Alternative CD-1 (No Action) would not be protective of human health and the environment since it does not include measures to control the release of contaminated soil and debris buried in the side slope of the former CDE facility’s banks adjacent to Bound Brook. Alternatives CD-3 and CD-4 are protective since the contaminated materials would be completely removed from the side slope and surrounding area to meet the 1 mg/kg remediation goal, with reconstruction afterwards to restore habitat. The contaminated materials would either be treated and buried on the former CDE facility (Alternative CD-3) or hauled off site to a landfill for disposal (Alternative CD-4). Both of these alternatives would remove a risk to human health and the environment and a potential source of contamination to Bound Brook.

Groundwater Discharge to Surface Water (GW)

Alternative GW-1 (No Action) would not be protective of human health and the environment since it does not include measures to prevent the continuing discharge of contaminated groundwater to Bound Brook. Alternative GW-2 would monitor the impact of the discharge of contaminated groundwater to Bound Brook sediments, but would rely on MNR of any groundwater releases to the sediments to address the impacts; based upon site-specific modeling of this release, it is doubtful whether MNR can sufficiently mitigate this release to achieve protectiveness. Alternatives GW-3 (Hydraulic Control), GW-4 (Permeable Reactive Barrier), and GW-5 (Reactive Cap) are protective of human health and the environment in the portion of Bound Brook affected by groundwater discharge, through containment or groundwater/pore water treatment prior to discharge to surface water. Remediation of the groundwater source was assessed in the OU3 ROD and found to be technically impracticable given site conditions; an assessment of the OU4 portion of groundwater confirmed that the conditions were similar, such that remediation of OU4 is also technically impracticable.

Waterline (WL)

Alternative WL-1 would not be protective of human health and the environment since it does not include measures to detect or prevent water leaks on a century old waterline that could impact the OU2 soil remedy area and the future completed OU4 remedial efforts. Alternative WL-2 (Waterline Monitoring, Replacement as Necessary) would allow for early detection of a leak but would not prevent a leak or break and the resulting impact on the OU2 soil remedy area and, if already implemented, the OU4 remedy, because overland flow of soils from the former CDE facility would most likely result in releases to surface water. Alternative WL-3 (Waterline Relocation) would eliminate the potential risk associated with the pipeline crossing the OU2 soil remedy area by relocating it off the former CDE facility property. This alternative provides the greatest protection of human health and the environment by permanently moving the waterline.

2. Compliance with applicable or relevant and appropriate requirements (ARARs)

Section 121(d) of CERCLA and NCP §300.430(f) (ii) (B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4).

<u>Applicable</u> requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State

environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those State standards that are identified by a state in a timely manner and that are more stringent than Federal requirements may be applicable. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner, and are more stringent than Federal requirements, may be relevant and appropriate.

Compliance with ARARs address whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides a basis for invoking a waiver.

Sediment and Floodplain Soils (SS)

Except for Alternative SS-1, the remaining SS alternatives considered in this Decision Document would comply with location- and action-specific ARARs regarding remediation and filling in floodplains, work in wetland areas, waste management, air quality, and storm water management, and would meet NJDEP's chemical-specific ARAR for PCBs in soils (1 mg/kg), based on non-residential direct contact. Both Alternatives SS-2 and SS-3, which include placement of material within the brook, would need to be implemented in compliance with the Clean Water Act, 33 U.S.C. §404(b)(1) and 40 CFR Part 230, which require that disturbance to aquatic habitat be minimized to the extent possible. Compliance with the substantive elements of New Jersey Flood Hazard Control Act (FHCA) Rules (NJAC 7:13-10 and 7:13-11) including those addressing placement of material in the flood hazard area and impacts to the riparian zone would also be required. Alternative SS-2 would comply with the FHCA. Alternative SS-3 calls for the removal of one foot of the floodplain areas to be capped and the placement of two feet of capping and cover; the FHCA Rules may necessitate additional removal (e.g., to a depth equal to the placed material, two feet) to allow for capping.

Capacitor Debris (CD)

Except for Alternative CD-1, the other two (CD-3, CD-4) alternatives would comply with location- and action-specific ARARs regarding remediation and filling in floodplains, work in wetland areas, waste management, air quality, and storm water management, and would meet NJDEP's chemical-specific ARAR based on non-residential direct contact for PCBs in soils. As with the soil/sediment component, compliance would need to be established with the Clean Water Act, 33 U.S.C. § 404(b)(1) and 40 CFR Part 230, as well as the substantive elements of New Jersey Flood Hazard Control Act Rules (N.J.A.C. 7:13-10 and 7:13-11).

Groundwater Discharge to Surface Water (GW)

Except for Alternative GW-1, the remaining alternatives would comply with location- and action-specific ARARs regarding remediation and placement of fill in floodplains, construction work in wetland areas, waste management, air quality (monitoring and emission limitations, as needed), storm water management, and discharge water quality limits. Under Alternatives GW-3, GW-4 and GW-5, surface water quality would be improved, though at this time it is not possible to predict when chemical-specific water quality ARARs will be met. Alternative GW-2 would have no impact to the ongoing discharge of PCBs at concentrations greater than surface water quality standards. In agreement with the OU3 conclusions, no practicable alternatives could be implemented to remediate the groundwater in this area. Consequently, EPA is invoking a TI ARAR waiver of Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs) established under the Safe Drinking Water Act, New Jersey Safe Drinking Water Quality Act MCLs (NJAC 7:10), and the New Jersey Groundwater Quality Criteria (GQCs) (NJAC 7:9C) to include the stretch of Bound Brook nearest the former CDE facility that has been found to discharge contaminated groundwater. Constituents exceeding MCLs to which the waiver applies are listed in Table 12.

Waterline (WL)

Under current conditions, all three of the alternatives would comply with ARARs. Alternative WL-1 has the greatest potential to adversely impact water quality ARARs since a future leak is likely and may not be detected in a timely manner. Alternative WL-2 would allow for early detection and response to future leaks, and may prevent future violations of water quality ARARs, depending on the severity of the leak and the speed of detection/response. Alternative WL-3 would prevent future violations of water quality criteria; construction activities would need to address water quality and floodplain ARARs.

A complete list of ARARs can be found in Table 8 in Appendix I.

Primary Balancing Criteria *– The next five criteria, criteria 3 through 7, are known as "primary balancing criteria". These criteria are factors by which tradeoffs between response measures are assessed so that the best options will be chosen, given site-specific data and conditions.*

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3. Long-Term Effectiveness and Permanence
Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.

Sediment and Floodplain Soils (SS)

Alternative SS-1 is neither effective in the long-term nor a permanent solution to controlling the contaminants in the brook sediment and floodplain soils.

Alternative SS-2 would remove the contaminated sediment in the brook and surrounding contaminated soils to meet the remediation goal of 1 mg/kg. It is both permanent and effective in the long term in controlling contaminants in the brook and surrounding floodplain, as well as in improving surface water quality. Alternative SS-3 would similarly remove contaminated sediment in the brook and soil along the banks of the brook in likely scour areas. Alternative SS-3 would also remove surface soils in the remainder of the floodplain and leave deeper contaminants in place and rely on capping to be protective over the long term. Capping would occur where surface water modeling indicates that erosional surface water stresses would not occur during flood events. For Alternative SS-3, long-term protectiveness would require capping to be maintained in perpetuity, with monitoring and regular maintenance to prevent direct contact. In addition, monitoring and maintenance of the cap would be required to allow for MNR to achieve and maintain the sediment remediation goal, because elevated PCB concentrations remaining in the floodplain could, with the failure of the cap, become a source of PCBs to the remediated brook sediments.

Alternatives SS-2 and SS-3 require that the fish advisory stay in place while concentrations of PCBs decline in fish tissue, as discussed in the Remedial Action Objectives section, to be protective in the long term.

For both alternatives, surface water quality would be improved by the removal of the contaminant source and the cleaning of the existing silt trap (located upstream of New Market Pond). Future maintenance of this silt trap would contribute to long-term improvement of fish tissue, as this device, and New Market Pond, have proved to be effective at collecting contaminated sediments and are expected to continue to do so.

For Alternative SS-3, capping in New Market Pond is protective over the long term by installation of armoring in the areas of the pond, near the dam/outfall, where there is currently evidence of erosional stresses. As with capping in the floodplain, long-term protectiveness of capping in New Market Pond is dependent upon the monitoring and periodic maintenance of the cap. Please refer to the "implementability" criterion, below, for a discussion of maintenance dredging in New Market Pond.

Capacitor Debris (CD)

Alternative CD-1 is neither effective in the long-term nor a permanent solution to controlling the contaminants buried in the side slope banks of Bound Brook adjacent to and considered part of the former CDE facility. This area is subject to erosion that would result in material contaminating Bound Brook.

Both Alternatives CD-3 and CD-4 would completely remove the capacitor debris in a manner that addresses risks to human health and the environment, and achieve the remediation goal of 1 mg/kg for floodplain soils.

Groundwater Discharge to Surface Water (GW)

Alternative GW-1 is neither effective in the long-term nor a permanent solution to controlling the ongoing release of contaminants into the brook from the groundwater. Alternative GW-2 relies solely on natural recovery that would occur within the sediments after release of contaminants from groundwater to surface water, and is not expected to be effective due to the long-term, ongoing release of contaminants from the bedrock matrix.

The remaining groundwater alternatives would contain and/or treat the contaminated groundwater discharging to Bound Brook and would require regular O&M of system components. Alternative GW-3 (hydraulic containment) requires active pumping and treatment to be effective, and requires the greatest level of O&M over time – both to manage operations of the pumping system as well as the operation of the groundwater treatment system. In addition, periodic equipment replacement and repair costs are likely to be somewhat greater when compared to Alternatives GW-4 and GW-5.

Alternatives GW-4 and GW-5 are passive treatment systems that could operate with limited oversight except for monitoring of the reactive media; however, the reactive media would require periodic replacement based on the rate of contaminant flux into the brook. The need for replacement across the length of the PRB or reactive cap could be difficult to assess through monitoring, because the rock matrix on both sides of the PRB would be contaminated.

Under Alternative GW-4, the PRB could not be placed precisely where it may best serve its purpose, but instead would be placed where it can be best installed given surface obstructions. By contrast, if implemented while the stream bed is being excavated or dredged under Alternatives SS-2 or SS-3, the reactive cap associated with Alternative GW-5 could be placed where needed to intercept and treat discharging groundwater/pore water. In addition, while the mass of VOC and PCB contamination within the bedrock matrix is substantially higher in concentration at the former CDE facility, there is substantial contaminant mass that has migrated under the brook itself and north of the brook. The reactive cap is expected to be more effective than the PRB because it would receive and treat the pore water from any recharge point (i.e., from the north or south side of the brook or from beneath it), whereas the PRB will only treat the mass flux that passes through it from the south.

Changes in pumping operations at the local municipal well fields could impact the need for, and requirements of, all three of the groundwater remediation systems (GW-3 through GW-5); the timing or impact of these changes cannot be assessed at this time. Given that groundwater source remediation was found to be technically impracticable under current site conditions, the three alternatives represent reasonable long-term solutions for addressing the release of contaminants to Bound Brook.

Waterline (WL)

Alternative WL-1, the No Action Alternative, is neither effective in the long term nor a permanent solution to preventing potential leaks in the pipeline from impacting the OU2 soil remedy area and future OU4 remedial efforts within Bound Brook. Alternative WL-2 would provide a method of detecting leaks, allowing for a more rapid response to a leak; however, it would do nothing to stop leaks from occurring and impacting the OU2 soil remedy area or OU4; neither would it protect against a catastrophic leak (*i.e.*, a burst pipe which would result in recontaminating the brook and requiring an additional remediation event). Alternative WL-3 would be effective over the long-term and would present a permanent solution because it removes the waterline from the former CDE facility property.

4. Reduction of Toxicity, Mobility, or Volume through Treatment
Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Sediment and Floodplain Soils (SS)

Alternative SS-1 does not include any treatment and would not reduce the toxicity, mobility, or volume of contaminants associated with the OU4 sediment and floodplain soil. The remaining alternatives would permanently reduce the volume and mobility of contaminants in the brook and floodplain soils by their removal and appropriate disposal. The alternatives do not require treatment, though treatment may be required prior to land disposal (stabilization/solidification, and/or, if necessary based on the characteristics of the sediment, thermal destruction).

Capacitor Debris (CD)

Alternative CD-1 does not include treatment and would not reduce the toxicity, mobility, or volume of contaminants in the CD areas. Alternative CD-3 would result in treatment of the majority of excavated material to reduce its toxicity prior to placement of the material on the former CDE facility (assuming it could be implemented successfully, as discussed below). Alternative CD-4 would not require treatment as a principal component, and would only treat a limited amount of the waste material if required to allow for disposal in a landfill.

Groundwater Discharge to Surface Water (GW)

Alternatives GW-1 and GW-2 do not incorporate treatment and hence would not reduce the toxicity, mobility, or volume of contaminants in groundwater addressed under OU4. Alternatives GW-3, GW-4 and GW-5 would not address the source of the discharge in the groundwater but would either treat or eliminate the discharge of the contaminated groundwater discharging to Bound Brook. Under Alternatives GW-3 through GW-5, the amount of contaminants that would be treated is small compared to the mass of contaminants found in the bedrock matrix at the former CDE facility; however, each alternative would treat the mass of contaminants currently discharging to Bound Brook. Mobility and volume are not affected under any of the alternatives.

Waterline (WL)

None of the alternatives provide treatment, or have any impact on the toxicity, mobility or volume of contaminants in OU4.

5. Short-Term Effectiveness
Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until cleanup levels are achieved.

Sediment and Floodplain Soils (SS)

Alternative SS-1 does not present any short-term risks to site workers or the environment because it does not include any active remediation work.

Among the sediment remediation techniques, dredging presents a greater risk of material being released during the removal process, although the risk is small and can be controlled by the use of silt curtains and silt fences downstream of active operations. Diverting the stream to allow for excavation of sediments poses a risk of localized flooding and the associated potential redistribution of contaminants, in the event that heavy precipitation exceeds the bypass system’s capacity to divert the flow in Bound Brook. Both methods would disrupt existing ecosystems in the wetlands and greenbelt spaces during removal operations; however, mitigation techniques are available to allow these areas to recover. Both the active alternatives (Alternatives SS-2 and SS-3) would have similar risks to remediation/construction projects of similar size and scope, including the potential for exposure to low levels of a range of contaminants, working on or around heavy equipment, working in water/wet environments, disruptions of ecosystems in the brook and in surrounding forested areas, increased construction-related traffic, quality of life impacts to nearby residents (noise, odors, lights), localized flooding during construction, and the potential spread of contaminants in the brook from dredging or runoff from excavation or an accidental release during construction.

In all cases, it is anticipated that these risks could be mitigated through the use of engineering controls, safe work practices, and personal protective equipment (PPE).

Capacitor Debris (CD)

Alternative CD-1 does not present any short-term risks to site workers or the environment because it does not include any active remediation work. Alternatives CD-3 and CD-4 would have similar risks to general construction activities such as working around/on/with heavy equipment and hauling equipment, and working near water. In addition, short-term risks would include the potential for exposure to a range of contaminants at potentially high concentrations, the potential for a construction-related release of contaminants to the brook, disruption of wildlife in the brook and in surrounding wetland/floodplain areas, increased construction traffic, and impacts to those living or working adjacent to the remediation area (noise, odors, lights).

On-site thermal desorption and placement of the treated material under the OU2 cap presents an additional risk for Alternative CD-3 beyond those associated with Alternative CD-4 due to the additional effort and processes associated with this alternative.

Groundwater Discharge to Surface Water (GW)

Alternatives GW-1 and GW-2 do not present any short-term risks to site workers or the environment because they do not include any active remediation activities.

Alternative GW-3 would involve installing extraction wells, a pumping system and an *ex situ* treatment system for contaminated groundwater. These are common remedial construction activities that pose minimal risk to site workers and the surrounding environment, though the treatment facility would need to be sited, preferably on the former CDE facility. Alternative GW-4 would involve controlled blasting in an urban setting for construction of a PRB. Blasting has the potential to impact surrounding structures and utilities, which presents greater short-term risks in comparison to the other alternatives. Alternative GW-5 involves construction in the brook similar to, and presumably at the same time as the sediment removal work, although limited bedrock removal would likely be necessary. Based upon EPA’s experience with the top surface of the bedrock during the OU2 remedial action, typical excavation equipment can be used to scrape off the bedrock surface that would need to be removed to install the reactive cap.

Other activities required as part of implementation of Alternatives GW-3, GW-4, and GW-5 would pose risks similar to those of remediation/construction projects of the same size and scope. These risks include the potential for exposure to low levels of a range of contaminants, working on or around heavy construction equipment, working in water/wet environments, disruption of wildlife in the brook and in surrounding forested areas, increased construction traffic, impacts to those living or working directly adjacent to the remediation area (noise, odors, lights), and the potential spread of contaminants in the brook during removal of bedrock for Alternatives GW-4 and GW-5.

It is anticipated that these risks could be mitigated through the use of engineering controls, safe work practices, and personal protective equipment.

Waterline (WL)

Alternative WL-1 does not present short-term risks to site workers or the community because it does not include any construction activities. Alternatives WL-2 and WL-3 would present similar risks to remediation/construction projects of similar size and scope, such as the potential for exposure to low levels of a range of contaminants, working on or around heavy construction equipment, and increased construction traffic on roads near the former CDE facility.

The scale of the risk would be comparatively higher for Alternative WL-3 because it entails a larger construction project. Alternative WL-3 would present the following additional risks and impacts: work around an active rail line, disruption of wildlife in the brook and surrounding wetland/floodplain area, the potential spread of contaminants in the brook, and working in water/wet environments.

In all cases, it is anticipated that these risks could be mitigated through the use of engineering controls, safe work practices, and PPE.

6. Implementability
Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Sediment and Floodplain Soils (SS)

Because Alternative SS-1 would not entail any construction, it would be easily implemented.

The two remaining alternatives were developed based on industry-standard construction techniques and would be technically feasible to implement. However, because of the size of the remediation area and the number of parties that own property within or adjacent to the areas that will be remediated, it may be difficult to negotiate necessary access with all parties involved.

However, Alternative SS-3 is far more difficult to implement from an administrative perspective because there are areas that require capping, deed notices or restrictive covenants which would need to be secured from property owners to assure the maintenance of the caps in perpetuity. Some restrictions may affect the implementability of capping of floodplains as part of Alternative SS-3. In the FS, EPA estimated that capping could be implementable on 17 of the 32 acres of floodplains with contaminated soil at concentrations exceeding remediation goals. For capping to be implementable and cost effective on those 17 acres, the FS assumed that 1 foot of surface material would be removed followed by the placement of a 1-foot sand layer as a contact barrier, plus a 1-foot organic soil layer to allow for ecosystem re-establishment. While this would technically be feasible, it may not be implementable as described in the FS. The loss of even a small amount of flood storage caused by the addition of capping material could have adverse effects an area that is already burdened with flooding problems. Capping may prevent the remedial action from meeting the FHCA expectation of "no net fill" in a wetland, or of restoring the existing habitats when the action is complete. These issues could be resolved by simply excavating additional material to allow for one-to-one capping and filling; however, if this change were to be required, given the estimated depth of PCB-contaminated soils of 3 feet and the removal of 2 feet, installing and maintaining (in perpetuity) the cap over a relatively thin layer of PCB-contaminated soil would influence the cost difference between the two alternatives, as discussed below.

Furthermore, much of the 17 acres that could be capped under Alternative SS-3 is used for active or passive recreation in Veterans Memorial Park, and a remedy that relies on capping in this area may face municipal opposition based on concerns that use restrictions might not be sufficiently protective. Capping may also be opposed by stakeholders in the Green Brook Flood Control Project, as it may impede future USACE/NJDEP flood control actions.

Similarly, implementability of capping in New Market Pond may also be limited. It is estimated that 1 foot of material would be hydraulically dredged (contrasted with the 2.5 feet dredged to achieve complete removal in Alternative SS-2), followed by the placement of a 6-inch thin sand cap. Areas near the dam/outfall would also require an armoring layer of stone, also estimated at 6 inches. If, during design, the volumes of material at depth were found to be less than predicted, there would be no advantage to capping, and maintaining in perpetuity, a relatively thin layer of PCB-contaminated sediment at depth instead of removing it.

In addition, given Piscataway Township’s periodic dredging of New Market Pond, installing a thin layer cap would impose restrictions on the Township and expose the cap to risk of damage.

Regarding Alternative SS-2, since the expectation is to remove all contaminated floodplain soils and sediments down to 1 mg/kg to eliminate risk to human health and the environment, capping would not be required. However, for both Alternatives SS-2 and SS-3, the large area to be addressed presents the likelihood that infrastructure or utilities will be encountered that will limit the removal of at least some (relatively small) portion of the contaminated sediments or floodplain soils. While no barriers of this kind were encountered during the RI/FS (except the waterline itself that is one of the remedial components of OU4), it is likely that some infrastructure (e.g., bridge abutment, railroad right-of-way, etc.) or utility corridor (e.g., buried gas, water, sewer lines, overhead power lines, etc.), will present obstacles to fully implement the remedial alternatives as described. If material barriers during full implementation are encountered, provisions for managing material in place (e.g., capping and institutional controls) would need to be considered, and the Agency would need to issue an Explanation of Significant Differences (ESD) to document this change. For the purposes of this evaluation criterion, however, it is expected to affect both SS alternatives equally. In comparison to Alternative SS-3, Alternative SS-2 is far more implementable because it does not entail the long-term cap management and degree of land use restrictions that would be needed for Alternative SS-3.

Capacitor Debris (CD)

Because Alternative CD-1 would not entail any work, it would be easily implemented. Alternatives CD-3 and CD-4 are based on industry-standard construction techniques and are technically feasible to implement.

Based upon EPA's experience with LTTD during the OU2 remedy (treating essentially the same material) there are several additional implementability concerns with Alternative CD-3. For example, the inability of the treatment system to reduce contaminants to acceptable levels when treating material containing capacitors and capacitor parts was a problem during the implementation of the OU2 remedy. The material in the "capacitor disposal area," the central disposal area on the facility, was not treated at all; rather, it was removed for off-site disposal because it was predominantly debris and not contaminated soil. The CD areas of OU4 are relatively close to this disposal location, and the OU4 RI sample results suggest that at least part of the CD areas have similar characteristics. Because the OU2 LTTD treatment unit was unable to meet the treatment criterion when processing soils containing capacitor parts, additional handling costs to remove the capacitors from the soils before treatment. While it is possible that a change in LTTD treatment temperature or residence time may address this issue, such changes would result in operational costs substantially greater than the assumed industry standard ($150 per ton was used in the FS).

Additionally, air emissions from an on-site treatment system may present another implementability challenge for use of LTTD. However, during the OU2 remedy, EPA did not encounter significant difficulties with air emissions.
As with the other remedial components, Alternatives CD-3 and CD-

4 incorporate an assumption of access/leasing of property for a central processing location to handle the excavated material. During the OU2 remedy, EPA successfully operated the LTTD unit at the former CDE property; depending upon the status of the redevelopment of this property, some limited space may be available for use. However, if this were not possible, siting such a facility elsewhere would be more challenging. Also, the likely siting location for a treatment facility under Alternative CD-3 would be at the rear (southeast) of the facility, a location slightly lower in elevation and more prone to flooding in a severe flood event.

Alternatives CD-3 and CD-4 would disrupt wetland ecosystems adjacent to Bound Brook during removal operations; however, these could be restored following remediation. Moreover, the ecosystem would be improved as a result of the remedial action.

Groundwater Discharge to Surface Water (GW)

Because Alternative GW-1 would not entail any work, it would be easily implemented.

Alternatives GW-2 and GW-3 would present the fewest technical challenges because they are comprised of monitoring networks and withdrawal systems that are routinely implemented, generally with few problems. The primary implementability hurdle associated with Alternative GW-3 would require securing land for a permanent, long-term treatment works. The treated water is expected to be discharged to surface water, and meeting discharge requirements is not expected to be difficult.

Alternative GW-4 is technically more challenging to implement because of the site conditions that must be addressed to construct a deep trench and install the reactive media. Alternative GW-5 is expected to be more technically implementable than Alternative GW-4, even though it requires some bedrock removal from the bed of Bound Brook and the deployment of a reactive cap in the brook.

Both Alternatives GW-4 and GW-5 pose long-term implementability challenges, because the reactive media used to treat the dissolved-phase contaminants will eventually be exhausted and need to be replaced. Under Alternative GW-5, measuring breakthrough would be difficult, because it would entail measuring across a treatment unit placed in a surface water body; however, measuring breakthrough for Alternative GW-4 would be even more challenging, because the bedrock matrix on both sides of the PRB would contain elevated concentrations of the contaminants of concern. Replacing the spent treatment material, whether in the PRB trench or in the streambed, is expected to be challenging; the reactive cap may be less difficult because the cap, which would be installed in overlapping blankets of treatment material, could be more easily accessed for removal and replacement, being at the surface, than the PRB material placed in a 75-foot deep trench.

Waterline (WL)

Because Alternative WL-1 would not entail any work, it would be easily implemented. Both Alternatives WL-2 and WL-3 are based on industry-standard construction techniques and are feasible to implement; however, Alternative WL-3 is technically and administratively more complex due to the extensive amount of work that would be performed in the public ROW, the need to jack and bore under two active rail lines, the need to cross under Bound Brook, and modifications to the existing water distribution system. The majority of work for Alternative WL-2 would be conducted on the former CDE facility property, which would limit the impact on the public; however, it would require the cooperation of the property owners/developers, and the replacement waterline may also affect the rail line. Under Alternative WL-2, if the monitoring program were to alert EPA and NJAW, the waterline owner, of an imminent failure, NJAW and EPA would work together to quickly resolve the issue; a temporary pipeline and booster systems would need to be constructed elsewhere to allow the pipeline to be shut down. The waterline would then be replaced with a new line parallel to the old waterline.

7. Cost

Includes estimated capital and O&M costs, and net present worth value of capital and O&M costs. See Table 9.

Sediment and Floodplain Soils (SS)

The present value costs are $177.6 million for Alternative SS-2 and $157.8 million for Alternative SS-3. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs. The largest single cost item for Alternative SS-2 is the cost of off-site disposal, at $45.4 million. This cost conservatively assumes that 10 percent of the excavated or dredged material will require disposal at a TSCA or RCRA subtitle C hazardous waste landfill, and that the remaining material can be sent to a subtitle D nonhazardous waste landfill.

The primary cost difference between Alternatives SS-2 and SS-3 is the additional removal and off-site disposal costs for removing the additional volumes as part of Alternative SS-2. The cost of cap installation and maintenance, even in perpetuity, is somewhat less than the capital cost of complete removal and disposal. As discussed above, if additional excavation were to be required to allow for a one-to-one placement of a cap under Alternative SS-3, the cost difference between Alternative SS-2 and SS-3 would be substantially decreased.

Capacitor Debris (CD)

The present values for the CD alternatives are $42.4 million for Alternative CD-3 and $32.8 million for Alternative CD-4. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs. These costs are predominantly associated with the capital costs of implementing the remedy. The costs of maintaining the treated soils and debris under the cap for Alternative CD-3 after implementation would be incremental to the cost of maintenance of the OU2 remedy. The difference in cost of on-site treatment versus off-site disposal is relatively small ($150 per ton for on-site treatment, $165 per ton for off-site disposal without treatment); the substantial cost savings associated with off-site disposal is associated with additional costs of siting the temporary treatment unit. Moreover, as discussed above under the implementability criterion, the Alternative CD-3 assumption of a per ton rate of $150 may not be achievable for 100 percent of the CD material, particularly for the soil containing capacitor debris. Additional costs might be incurred for off-site disposal of contaminated material that could not be treated.

Under Alternative CD-4, EPA conservatively assumed, for cost-estimating purposes, that 10 percent of the CD material would require off-site treatment by incineration prior to disposal. Based upon experience with the capacitor disposal area addressed as part of the OU2 remedy, it is possible that none of the CD material would actually require incineration under TSCA, resulting in a reduction in the cost of Alternative CD-4 from $32.4 million to $30.6 million.

Groundwater Discharge to Surface Water (GW)

The costs for the three active GW alternatives are \$23.3 million for Alternative GW-3, \$27.1 million for Alternative GW-4, and \$22.1 million for Alternative GW-5. Capital costs, operation and maintenance costs, and periodic costs were developed for each alternative. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs.

For Alternative GW-3 (hydraulic containment) the largest component of the cost, an estimated present worth of \$15.2 million, would be the O&M of the treatment works. For Alternatives GW-4 and GW-5, the costs for O&M of \$3.8 million and \$3.2 million, respectively, attributable to monitoring performance of the passive treatment operations, would be similar. The costs (\$4.6 million and \$5.4 million, respectively) of periodically replacing the treatment media would also be similar. The long-term O&M and periodic maintenance for the three active remedial alternatives would be needed in perpetuity; a 30-year time frame was used for all these costs, for cost-estimating purposes.

As discussed previously, under the "long-term effectiveness and permanence" and "implementability" criteria, EPA is uncertain how long it will be before breakthrough occurs for Alternatives GW-4 and GW-5. For cost-estimating purposes, it is assumed that one complete replacement of reactive media would occur during the 30-year period. However, more frequent replacement may be necessary, thus increasing the costs for these alternatives. This would certainly be the case if replacement were called for under Alternative GW-4, because replacing only part of the reactive media within the trench is not practical; for Alternative GW-5, it is expected that breakthrough would not occur uniformly, and it would be cost-effective to replace small sections of the reactive cap as needed, rather than replacing the entire cap.

When comparing Alternatives GW-4 and GW-5, a significant difference in the capital costs is from the cost of disposal. Alternative GW-4 requires a larger quantity of bedrock to be removed, and the rock removed from the trench in Alternative GW-4 includes portions of the on-site bedrock, where the rock matrix is saturated with high concentrations of VOCs and PCBs. For cost-estimating purposes, this material is assumed to require disposal at a TCSA or RCRA subtitle C facility. By contrast, the bedrock material scraped from the streambed to allow for installation of the reactive cap as part of Alternative GW-5, while still subject to rock-matrix diffusion, is expected to contain lower concentrations of contaminants and to be acceptable for disposal at a RCRA subtitle D facility. If either of these assumptions is incorrect, then the capital costs of these two alternatives would be closer (either Alternative GW-4 would be less expensive or Alternative GW-5 would be more expensive).

Waterline (WL)

The present value for WL-2 is $4.1 million, and for Alternative WL-3, $8.9 million. The cost of Alternative WL-2 includes replacement of the waterline in the existing easement ten years into the future; if replacement were needed earlier or later, the costs would most likely change. Capital costs, operation and maintenance costs, and monitoring costs were developed for each alternative. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs.

***Modifying Criteria** – The final two evaluation criteria, criteria 8 and 9, are called “modifying criteria” because new information or comments from the state or the community on the Proposed Plan may modify the preferred response measure or cause another response measure to be considered.*

Note: The remaining two criteria were considered for all alternatives per component of the OU4 remedy.

8. State Acceptance

Indicates whether based on its review of the RI/FS reports and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with the selected response measure.

The State of New Jersey concurs with all components of the selected remedy.

9. Community Acceptance

Summarizes the public’s general response to the response measures described in the Proposed Plan and the RI/FS reports. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about.

EPA solicited input from the community on the remedial response measures proposed for the site. Oral comments presented at the public meeting were recorded, and EPA received written comments during the public comment period. Appendix IV, the

Responsiveness Summary, addresses all public comments received by EPA during the public comment period. Overall, the community members, elected officials and stakeholders were in favor of EPA’s recommended alternatives. Most concerns identified were the wetland habitat destruction and subsequent restoration. There was some skepticism as to whether the contaminated groundwater/surface water seeping into Bound Brook could be captured in its entirety. As stated by EPA at the public meeting, efforts will be made to minimize damage to wetland habitat to the extent possible, and a robust restoration plan will follow the remedial efforts.

Several commenters at the public meeting were concerned with EPA’s assessment of the groundwater, addressed in 2012 in the OU3 ROD. While not the subject of this response action, the Agency responded to questions and reiterated the conclusions that remedial actions to restore the groundwater were technically impracticable, presented in the OU3 ROD.

PRINCIPAL THREAT WASTE

Source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration to groundwater, surface water or as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or mobile, that generally cannot be reliably contained or present a significant risk to human health or the environment should exposure occur.

The remedial alternatives for the OU4 remedy were evaluated and address soil and capacitor debris contaminated at concentrations greater than 100 mg/kg PCBs as principal threats in Bound Brook and along the Bound Brook banks adjacent to the former CDE facility.

SELECTED REMEDY

Based upon consideration of the results of the OU4 site investigations, the requirements of CERCLA, the detailed analysis of the remedial alternatives and public comments, EPA has determined the following alternatives for each of the four components along with associated costs make up the appropriate remedy for OU4:

Sediments and Floodplain Soils (SS)

Alternative SS-2, Excavation/Dredging of Sediments and Floodplain Soils with Monitored Natural Recovery.

Total Present Value (cost) of $177.6 million.

Capacitor Debris (CD)

Alternative CD-4, Excavation and Off-site Disposal of Capacitor Debris.

Total Present Value of $32.8 million.

Groundwater Discharge to Surface Water (GW)

Alternative GW-3, Hydraulic Control of Groundwater. Institutional controls in form of a CEA to prevent the installation of new drinking water wells.

Total Present Value of $23.3 million.

Waterline Replacement (WL)

Alternative WL-3, Waterline Replacement in New Easement.

Total Present Value of $8.9 million.

The estimated total cost of the selected remedy for OU4 is: $242,600,000. A detailed breakdown of the costs of the four remedial components are included in Table 9.

This remedy best satisfies the requirements of CERCLA Section 121 and the NCP’s nine evaluation criteria for remedial alternative, 40 CFR § 300.430(e)(9). This remedy includes the following components:

- excavation of floodplain soils and Bound Brook sediments containing PCBs over 1 mg/kg with off-site disposal;
- after soil and sediment removal to 1 mg/kg, monitored natural recovery of Bound Brook sediments to a remediation goal of 0.25 mg/kg PCBs;
- excavation of an area adjacent to the former CDE facility where buried PCB-contaminated capacitors are present, followed by off-site disposal;
- hydraulic containment of groundwater that discharges to Bound Brook, to prevent the release of groundwater contaminants to surface water;
- relocation of a 36-inch waterline that traverses the former

CDE facility to protect the integrity of the facility remedy and future remedies implemented in Bound Brook; and,

- institutional controls including continuation of fish consumption advisory already established by NJDEP, signage to remind anglers and other recreational users of the presence of PCBs in sediments and fish and the need to take preventative measures, and inclusion of the area of groundwater discharging to Bound Brook adjacent to the CDE facility in the Classification Exception Area already required for the OU3 remedy.

In addition, in the 2012 ROD that addressed site-related groundwater contamination, EPA evaluated alternatives for restoration of groundwater to meet ARARs and concluded that no practicable alternatives could be implemented. Consequently, EPA invoked an ARAR waiver for the groundwater at the site due to technical impracticability (TI). However, EPA deferred a TI determination for the small area of the groundwater plume that discharges into Bound Brook. This area was further evaluated as part of this remedy selection process for Bound Brook. As a result, EPA has concluded that the Bound Brook area groundwater, shown in Figure 6, is also technically impracticable to remediate and, therefore, a TI ARAR waiver should be granted for the area of the groundwater that discharges into Bound Brook deferred in the 2012 ROD. EPA is invoking a TI ARAR waiver of Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs) established under the Safe Drinking Water Act, New Jersey Safe Drinking Water Quality Act MCLs (NJAC 7:10), and the New Jersey Groundwater Quality Criteria (GQCs) (NJAC 7:9C) to include the stretch of Bound Brook nearest the former CDE facility that has been found to discharge contaminated groundwater. Constituents exceeding ARARs to which the waiver applies are listed in Table 12.

Further remedial components:

- **Monitored Natural Recovery (MNR):** The Selected Remedy relies on MNR to aid in achieving the remedial objectives that pertain to fish recovery. As noted previously, the remediation goal of 1 mg/kg PCBs is not adequate, on its own, to achieve a protective level for a 10^{-4} incremental lifetime cancer risk for fish consumption, which would require a fish tissue target range discussed in the Remedial Action Objectives section, above. EPA expects that, by addressing PCB-contaminated sediments and soils at levels in excess of 1 mg/kg and eliminating ongoing sources of contamination to the sediment (the capacitor debris areas and the groundwater discharging to Bound Brook), the OU4 remedy, including natural recovery will reduce contamination in fish tissue to protective levels within a reasonable timeframe, conservatively estimated at 100 years.

- **Monitoring:** The Selected Remedy includes long-term monitoring of sediment, floodplain soils, surface water and fish tissue to demonstrate the ongoing protectiveness of the remedy, and to demonstrate that MNR is reducing fish tissue concentrations over time to protective levels. Because the time frame associated with MNR is long (as much as 100 years), in addition to expecting to eventually achieve the fish tissue levels discussed in the Remedial Action Objectives section over the long term, the Agency is also identifying an interim fish tissue target concentration of 1 mg/kg (10^{-4} cancer risk) and 0.2 mg/kg (HQ = 1), a level of PCBs in fish tissue that would allow for consumption of up to 12 fish meals per year by an adult angler. At that stage in the recovery process, NJDEP may begin to reconsider the current fish advisory ("do not eat"), and begin including limited consumption advice in its recommendations. The Agency expects to reach at least the 10^{-4} cancer risk level for fish consumption within the first 10 to 15 years after remedy completion.

- **Institutional controls:** The remedial action incorporates institutional controls, which are administrative and legal controls that help to minimize the potential for human exposure to contaminants, to assure the protectiveness of the remedy. These include fish advisory already established by NJDEP[14]. Also, NJDEP's residential (unrestricted use) standard for PCBs of 0.2 mg/kg is not an ARAR for properties in the floodplains that constitute the majority of the land to be addressed by this remedial action, which are mostly municipal or county land (such as park land or designated open space), and not subject to future residential use; however, land use restrictions, in the form of a deed notice or similar control, may be needed on a few privately owned parcels, to assure remedy protectiveness. The deed notice or other legal instrument would assure that the land use does not become residential/unrestricted in the future. The remedy also requires a groundwater use restriction; however, this

14 See http://www.nj.gov/dep/dsr/fishadvisories/2013-final-fish-advisories.pdf (beginning on page 16).

action, a CEA/Well Restriction Area (WRA), is already required for the OU3 remedy.

- **Signage and Angler Community Education:** Because implementation of the remedy will take a number of years, and protective levels in fish tissue are not expected for many years after that, the remedy will require continued signage to remind anglers and other recreational users of the Bound Brook corridor of the presence of PCBs in sediments and fish, and the need to take preventative measures, such as catch-and-release, when in the area. While signs and other educational tools have limited effectiveness, the Agency will continue to maintain signs in two languages, English and Spanish, in collaboration with NJDEP and the local governments.

- The large area to be addressed by the OU4 remedy presents the likelihood that infrastructure or utilities will be encountered that will limit the removal of at least some (relatively small) portion of the contaminated sediments or floodplain soils exceeding 1 mg/kg. While no barriers of this kind were encountered during the RI/FS (except the waterline itself that is one of the remedial components of OU4), it is likely that some infrastructure (e.g., bridge abutment, railroad right-of-way, etc.) or utility corridor (e.g., buried gas, water, sewer lines, overhead power lines, etc.), will present obstacles to full implementation of the remedial action, as it is currently described. If physical barriers to full implementation are encountered, provisions for managing material in place (e.g., capping and institutional controls) would need to be considered. The Agency would need to issue an Explanation of Significant Differences (ESD) to document this change.

Summary of the Rationale for the Selected Remedy

The preference for the Selected Alternatives are based upon these principal factors:

Soils and Sediments Alternatives

While Alternatives SS-2 and SS-3 would similarly remediate sediments with concentrations that exceed 1 mg/kg PCBs, and allow MNR to further reduce sediment and surface water concentrations to levels that would allow fish to recover to protective levels, Alternative SS-2, which would remove floodplain soils within the Bound Brook corridor in excess of 1 mg/kg of PCBs, would also be more protective over the long term. Under current conditions, Bound Brook sediments are generally more contaminated than the neighboring floodplains. The floodplain is a depositional area relative to most of the stream channel, and does not act as a significant source of PCBs to the sediments under current conditions. However, under Alternative SS-3, which would remove the contaminated sediments above 1 mg/kg PCBs but also leave higher PCB concentrations in part of the floodplain under a cap, and rely upon natural recovery to reach a protective value for fish consumption, even a temporary breech of capped floodplain soils could allow these soils to recontaminate the sediments. Of the 17 acres of floodplains where capping is feasible, cost-effectiveness would be achieved by building up a cap above the current surface contour. This would face technical and administrative challenges, discussed above, that may make it not implementable as developed in the FS (removing one foot of surface removal to accommodate two feet of capping). If excavating enough material prior to capping to maintain the current ground surface were required, Alternative SS-3 would not be substantially different in cost than Alternative SS-2. Capping in New Market Pond may also be subject to similar limitations.

The SS alternatives conservatively assume that the contamination will consistently be found as deep as three feet bgs. While this is a reasonable assumption in an FS, the RI data indicate that most of the contamination is in the top one to two feet of the floodplains, which are the depths that would need to be excavated to make room for capping under Alternative SS-3. If this is the case, Alternative SS-2 would be more implementable than Alternative SS-3 because of the technical challenges of capping a relatively thin layer of contamination and maintaining that cap in perpetuity.

It is expected that the surface water quality will be improved by the removal of the contaminant sources and sediments with PCB concentrations in excess of 1 mg/kg, including the cleaning out of the existing silt trap located upstream of New Market Pond. Future maintenance of this silt trap would contribute to long-term improvement of fish tissue, as this device (and New Market Pond) have proven to be effective at collecting contaminated sediments and are likely to do so in the future.

Capacitor Debris Alternatives

Based upon EPA's earlier experience with treating contaminated soil and debris using LTTD, using this treatment method for the CD area would face technical challenges, impairing implementability. EPA's selection of off-site disposal is primarily based upon these likely implementation difficulties, and cost.

Groundwater Alternatives

EPA’s selection of hydraulic containment of the groundwater is based upon an expectation that this proven technology will be more reliable than the reactive cap, and can be implemented more quickly (the reactive cap could not be installed until the sediment remedy is being implemented for that reach of the brook). Hydraulic control is also preferred over the PRB because it has the capacity to treat all the contaminant mass that currently reaches the brook, whereas the PRB could only address contaminant mass that passes through the treatment zone flowing from the south.

Waterline Alternatives

The decision to move the waterline is based upon an expectation that the existing line will eventually fail and, at the time of failure it would need to be replaced either in the same location as contemplated in Alternative WL-2, or in a new route as contemplated as in Alternative WL-3. The potential for catastrophic failure, which would harm the protectiveness of the OU2 remedy, and, eventually the OU4 remedy, is not worth the deferred cost. In addition, the opportunity to install a new waterline under Bound Brook in conjunction with the sediment excavation is expected to be beneficial to the overall cost-effectiveness of the remedy.

Green Remediation

Consistent with EPA Region 2’s Clean and Green policy, EPA will evaluate the use of sustainable technologies and practices with respect to implementation of all components of the selected remedy.

STATUTORY DETERMINATIONS

As was previously noted, CERCLA §121(b)(1) mandates that remedial actions must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA §121(d) further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to §121(d)(4).

Protection of Human Health and the Environment

The selected remedy's components will be protective of human health and the environment by permanently removing all principal threat waste from the areas addressed in this OU, removing and/or reducing the contaminated sediment below remediation goals throughout the Bound Brook corridor, and preventing recontamination via capturing porewater/groundwater discharge to Bound Brook.

Implementation of the selected remedy will not pose unacceptable short-term or adverse cross-media impacts.

Compliance with ARARs

As determined in the 2012 OU3 site-related contaminated groundwater ROD, restoration of the groundwater beneath Bound Brook to beneficial uses is not practicable. In 2012, EPA invoked an ARAR waiver of groundwater and drinking water chemical-specific ARARs for an area of contaminated groundwater affected by site contaminants, due to technical impracticability. The basis for this determination of technical impracticability is included in the OU3 ROD. However, a decision on the Bound Brook corridor (located within OU3's TI zone) was deferred until a full analysis was completed as part of OU4's investigation and remedy.

After reviewing the data and discussions documented in the OU4 RI/FS, EPA concludes that groundwater discharging into Bound Brook along a 1,600 foot stretch of the corridor is in fact contaminated with both PCBs and VOCs. However, in agreement with the OU3 conclusions, no practicable alternatives could be implemented to remediate the groundwater in this area. Consequently, EPA is expanding the OU3 TI ARAR waiver (noted as the green line on Figure 6) to include the stretch of Bound Brook nearest the former CDE facility that has been found to discharge contaminated groundwater. The extent of the additional area of the ARAR waiver is depicted (noted as the blue line) in Figure 6.

Use of the groundwater within this area will be restricted through a CEA, preventing exposure to contamination in excess of state and federal drinking water standards.

A comprehensive ARAR discussion is included in the FS and a complete listing of ARARs is included in Table 8.
Highlights of ARARs:

- Action Specific ARARs -
  - Clean Water Act, 33 U.S.C. §404(b)(1); 40 CFR Part 230
  - New Jersey Pollutant Discharge Elimination System rules, NJAC 7:14A-12

- Chemical-Specific ARARs
  - New Jersey Soil Remediation Standards, NJAC 7:26D
  - Federal Safe Drinking Water Act, 40 CFR Part 141, drinking water standards
  - New Jersey Drinking Water Quality Act, NJAC 7:10
  - New Jersey Groundwater Quality Criteria, NJAC 7:9C
  - New Jersey Surface Water Quality Standard (for TCE)

- Location-Specific ARARs
  - New Jersey Flood Hazard Control Act Rules, NJAC 7:13
  - New Jersey Freshwater Wetlands Protection Act Rules, NJAC 7:7A.

Cost Effectiveness
EPA has determined that the selected remedy is cost-effective and represents a reasonable value. In making this determination, the following definition was used: “A remedy shall be cost-effective if its costs are proportional to its overall effectiveness” (NCP §300.430(f)(1)(ii)(D)). EPA evaluated the “overall effectiveness” of those alternatives that satisfied the threshold criteria (*i.e.*, were protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; and short–term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The relationship of the overall effectiveness of the selected remedy was determined to be proportional to costs and hence, the alternatives selected represent reasonable value.

Please refer to Table 9 for a summary of costs for the selected remedy.

Utilization of Permanent Solutions and Alternative Treatment Technologies

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner. Of those alternatives that are protective of human health and the environment and comply with ARARs to the extent practicable, EPA has determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and State and community acceptance.

The selected remedy will provide adequate long-term control of risks to human health and the environment through eliminating and/or preventing exposure to the contaminated sediment, floodplain soils, and groundwater. The selected remedy is protective of short-term risks.

Preference for Treatment as a Principal Element

The statutory preference for remedies that employ treatment as a principal element is satisfied by the selected remedy. Contaminated sediment, floodplain soils, and groundwater are being addressed through removal and/or capture with treatment as necessary.

Five-Year Review Requirements

Because the remedy will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the selected remedy to ensure that the remedy is, or will be, protective of human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU4 of the Cornell-Dubilier Electronics site was released for public comment on September 30, 2014. EPA received a request to extend the public comment period. EPA granted the request and extended the comment period from 45 to 76 days. The comment period closed on December 15, 2014.

The Proposed Plan identified the following components as EPA’s preferred remedy:

Sediments and Floodplain Soils (SS): Alternative SS-2, Excavation/Dredging of Sediments and Floodplain Soils with

Monitored Natural Recovery.

Capacitor Debris (CD): Alternative CD-4, Excavation and Off-site Disposal of Capacitor Debris.

Groundwater Discharge to Surface Water (GW): Alternative GW-3, Hydraulic Control of Groundwater.

Waterline Replacement (WL): Alternative WL-3, Waterline Replacement in New Easement.

EPA reviewed all verbal and written comments submitted to EPA during the public comment period. After reviewing the comments, EPA has concluded that no modifications are needed to the remedy discussed in the Proposed Plan.

APPENDIX I
Tables & Figures

Table 1
Summary of Chemicals of Concern and
Medium-Specific Exposure Point Concentrations

Exposure Point	Chemical of Concern	Concentration Detected Min	Concentration Detected Max	Concentration Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
Scenario Timeframe: Current/Future Medium: Sediment Exposure Medium: All Sediment								
EU BB5	Total PCB Aroclors	0.035	235	mg/kg	132/162	24	mg/kg	97.5% Kaplan-Meier (Chebyshev) UCL
EU BB6	Total PCB Aroclors	0.015	0.81	mg/kg	23/105	0.81	mg/kg	Maximum detected concentration.
Scenario Timeframe: Current/Future Medium: Sediment Exposure Medium: Surface Sediment								
EU BB5	Benzidine	0.79	3	mg/kg	2/2	3	mg/kg	Max
	Total PCB Aroclors	0.04	235	mg/kg	97/113	29	mg/kg	97.5% Kaplan-Meier (Chebyshev) UCL
Scenario Timeframe: Current/Future Medium: Floodplain Soil Exposure Medium: All Soil								
EU BB3	Total PCB Aroclors	0.0062	31	mg/kg	204/232	5	mg/kg	95% Kaplan-Meier (Chebyshev) UCL
EU BB4	Total PCB Aroclors	0.0031	470	mg/kg	403/464	21	mg/kg	97.5% Kaplan-Meier (Chebyshev) UCL
EU BB5	Total PCB Aroclors	0.0025	924	mg/kg	561/688	33	mg/kg	97.55% Kaplan-Meier (Chebyshev) UCL
EU BB6	Total PCB Aroclors	0.0227	62	mg/kg	11/12	62	mg/kg	Maximum detected concentration.
Scenario Timeframe: Current/Future Medium: Floodplain Soil Exposure Medium: Surface Soil								
EU BB5	Total PCB Aroclors	0.011	924	mg/kg	366/437	41	mg/kg	97.5% Kaplan-Meier (Chebyshev) UCL
EU BB6	Total PCB Aroclors	0.125	62	mg/kg	6/6	62	mg/kg	Maximum detected concentration.
Scenario Timeframe: Current/Future Medium: Biota - Fish Tissue Exposure Medium: Predatory Fish								
EU GB	Total PCB Aroclors	0.06 J	5.3	mg/kg	67/67	1.2	mg/kg	95% Approximate Gamma UCL
EU BB1	Total PCB Aroclors	0.06 J	5.3	mg/kg	67/67	1.2	mg/kg	95% Approximate Gamma UCL
EU BB2	Total PCB Aroclors	0.06 J	5.3	mg/kg	67/67	1.3	mg/kg	95% Student's-t UCL
EU BB3 & BB4	Total PCB Aroclors	0.06 J	5.3	mg/kg	67/67	2.4	mg/kg	95% Approximate Gamma UCL
EU BB5	Total PCB Aroclors	0.06 J	5.3	mg/kg	67/67	3.4	mg/kg	95% Approximate Gamma UCL
EU BB6	Total PCB Aroclors	0.06 J	5.3	mg/kg	67/67	0.23	mg/kg	95% Student's-t UCL
EU SL	Total PCB Aroclors	0.066	1.3	mg/kg	10/10	0.81	mg/kg	95% Chebyshev (Mean, Sd) UCL
Scenario Timeframe: Current/Future Medium: Biota - Fish Tissue Exposure Medium: Bottom-Feeding Fish								
EU GB	Total PCB Aroclors	.04 J	42 W	mg/kg	94/94	18	mg/kg	95% Chebyshev (Mean,Sd) UCL
EU BB1	Total PCB Aroclors	.04 J	42 W	mg/kg	94/94	18	mg/kg	95% Chebyshev (Mean,Sd) UCL
EU BB2	Total PCB Aroclors	.04 J	42 W	mg/kg	94/94	12	mg/kg	95% Approximate Gamma UCL
EU BB3	Total PCB Aroclors	.04 J	42 W	mg/kg	94/94	4.3	mg/kg	95% Approximate Gamma UCL
EU BB4	Total PCB Aroclors	.04 J	42 W	mg/kg	94/94	4.3	mg/kg	95% Approximate Gamma UCL
EU BB5	Total PCB Aroclors	.04 J	42 W	mg/kg	94/94	13	mg/kg	95% Approximate Gamma UCL
EU BB6	Total PCB Aroclors	.04 J	42 W	mg/kg	94/94	6.2	mg/kg	99% Chebyshev (Mean, Sd) UCL
EU SL	Total PCB Aroclors	0.24 J	17 J	mg/kg	17/17	6.4	mg/kg	95% Chebyshev (Mean,Sd) UCL
Scenario Timeframe: Current/Future Medium: Biota - Shellfish Exposure Medium: Asiatic Clams								
EU GB, BB1, BB2, BB3, BB4, BB5, SL	Total PCB Aroclors	.06 N	2.76 J	mg/kg	14/15	2.05	mg/kg	95% Student's-t UCL
Scenario Timeframe: Current/Future Medium: Biota - Shellfish Exposure Medium: Crayfish								
EU GB, BB1, BB2, BB3, BB4, BB5, SL	Total PCB Aroclors	0.4 J	2.4 J	mg/kg	29/38	1.5	mg/kg	95% Student's-t UCL
EU BB6	Total PCB Aroclors	0.4 J	2.2	mg/kg	N/A	2.2	mg/kg	Maximum detected Concentration

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

This table presents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs detected in soil, sediment, fish tissue and shellfish (i.e., the concentration that will be used to estimate the exposure and risk from each COC in these media). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPC and how it was derived.

Qualifier Codes:
J = Estimated concentration
W = Sample was weathered, value is estimated
N = Indicates presumptive evidence of a compound

Table 2
Selection of Exposure Pathways

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Water	Surface Water	OU4 Bound Brook Study Area	Recreationist/ Sportsman/ Angler	Adult	Incidental Ingestion	None	Surface water could be contacted while wading in water bodies, fishing, or otherwise recreating in the OU4 Bound Brook Study Area. Incidental ingestion of chemicals of potential concern (COPC) in surface water during such activites is not likely or negligible; however, dermal contact exposure may occur.
						Dermal	Quantitative	
					Adolescent	Incidental Ingestion	None	
						Dermal	Quantitative	
				Outdoor Worker	Adult	Incidental Ingestion	None	Surface water could be contacted while maintaining, repairing, and/or cleaing culverts, spillways, bridges, and other structures in the OU4 Bound Book Study Area. Incidental ingestion of COPCs in surface water during such activities is not likely or negligible; however, dermal contact exposure may occur.
						Dermal	Quantitative	
		Outdoor Air		Recreationist/ Sportsman/ Angler	Adult	Inhalation	Qualitative	Voltaile organic compounds(VOCs) may be present in surface water samples from the OU4 Bound Brook Study Area; however, inhalation of VOCs that may volatilize from surface water to outdoor air is not likely. VOCs would mix with outdoor ambient air, and the resultant VOC concentrations in outdoor air would be negligible.
					Adolescent	Inhalation	Qualitative	
				Outdoor Worker	Adult	Inhalation	Qualitative	
	Sediment	Surface Sediment	OU4 Bound Brook Study Area	Recreationist/ Sportsman/ Angler	Adult	Incidental Ingestion	Quantitative	Sediment could be contacted while wading in water bodies, fishing, or otherwise recreating in the OU4 Bound Brook Study Area.
						Dermal	Quantitative	
					Adolescent	Incidental Ingestion	Quantitative	
						Dermal	Quantitative	
		All Sediment		Outdoor Worker	Adult	Incidental Ingestion	Quantitative	Sediment could be contacted while maintaining, repairing, and/or cleaning culverts, spillways, bridges, and other structures in the OU4 Bound Brook Study Area.
						Dermal	Quantitative	
	Floodplain Soil	Surface Soil	OU4 Bound Brook Study Area	Recreationist/ Sportsman/ Angler	Adult	Incidental Ingestion	Quantitative	Floodplain soil could be contacted while recreating or fishing in the OU4 Bound Brook Study Area.
						Dermal	Quantitative	
					Adolescent	Incidental Ingestion	Quantitative	
						Dermal	Quantitative	
		All Soil		Outdoor Worker	Adult	Incidental Ingestion	Quantitative	Floodplain soil could be contacted while maintaining, repairing, and/or cleaning culverts, spillways, bridges, and other structures in the OU4 Bound Brook Study Area.
						Dermal	Quantitative	
				Resident	Adult	Incidental Ingestion	Quantitative	Floodplain soil could be contacted by residents, as residences are located within the 100-year floodplain of the OU4 Bound Brook Study Area. However, the potential for exposure to soil in residential yards near the former CDE facility is being addressed by USEPA risk assessors as part of the OU1 Remedial Investigation (RI). The residential scenario included herein is not an evaluation of current/future residential exposures per se, but instead represents the Reasonable Maximum Exposure (RME) that any receptor population accessing the OU4 floodplain areas may have (i.e., it is unlikely anyone using the floodplain areas would have a greater exposure than that associated with residential use). The residential exposure scenario is a conservative assessment and is thereby protective of most other receptor populations as well.
						Dermal	Quantitative	
					Child	Incidental Ingestion	Quantitative	
						Dermal	Quantitative	
		Surface Soil		Commercial/ Industrial Worker	Adult	Incidental Ingestion	Quantitative	Floodplain soil could be contacted by commercial/industrial workers who primarily work outdoors on commercial/industrial properties located within the 100-year floodplain of the OU4 Bound Brook Study Area. While floodplain soils from these properties were not sampled as part of the RI for OU4, an outdoor site worker exposure scenario was included, assuming the floodplain soil data available for this RI represent soil from the entire floodplain area.
						Dermal	Quantitative	
		All Soil		Construction/ Utility Worker	Adult	Incidental Ingestion	Quantitative	Utilities may be present within the 100-year floodplain of the OU4 Bound Brook Study Area. Floodplain soil could be contacted by construction/utility workers who perform construction or maintenance work on underground utilities.
						Dermal	Quantitative	
		Outdoor Air		Recreationist/ Sportsman/ Angler	Adult	Inhalation	Quantitative	VOCs, if present in floodplain soil, and/or particulates generated from floodplain soil may be inhaled while recreating or fishing in the OU4 Bound Brook Study Area.
					Adolescent	Inhalation	Quantitative	
				Outdoor Worker	Adult	Inhalation	Quantitative	VOCs, if present in floodplain soil, and/or particulates generated from floodplain soil may be inhaled while maintaining, repairing, and/or cleaning culverts, spillways, bridges, and
				Resident	Adult	Inhalation	Quantitative	VOCs, if present in floodplain soil, and/or particulates generated from floodplain soil may be inhaled by residents in floodplain areas within the OU4 Bound Brook Study Area. As described for ingestion and dermal contact exposures of residents, the residential scenario included herein is not an evaluation of current/future residential exposures per se, but instead represents the RME that any receptor population accessing the OU4 floodplain areas may have. The residential exposure scenario is a conservative assessment and is thereby protective of most other receptor populations as well.
					Child	Inhalation	Quantitative	
				Commercial/ Industrial Worker	Adult	Inhalation	Quantitative	VOCs, if present in floodplain soil, and/or particulates generated from floodplain soil may be inhaled while working outdoors on commercial/industrial properties within the OU4 Bound Brook Study Area.
				Construction/ Utility Worker	Adult	Inhalation	Quantitative	VOCs, if present in floodplain soil, and/or particulates generated from floodplain soil may be inhaled while performing construction/utility work in floodplain areas within the OU4 Bound Brook Study Area.
	Biota	Fish Fillet	OU4 Bound Brook Study Area	Angler	Adult	Ingestion	Quantitative	Locally-caught fish could be consumed.
					Adolescent	Ingestion	Quantitative	
					Child	Ingestion	Quantitative	
		Other Biota		Angler	Adult	Ingestion	Quantitative	Other locally-caught biota (e.g., Asiatic clams, crayfish) may also be consumed.
					Adolescent	Ingestion	Quantitative	
					Child	Ingestion	Quantitative	

Summary of Selection of Exposure Pathways

The table describes the exposure pathways associated with the media that were evaluated for the risk assessment, and the rationale for the inclusion of each pathway. Exposure media, exposure points, and characteristics of receptor populations are included.

Notes

1 - While periodic flooding does occur and residents or commercial/industrial workers may be exposed to COPCs in surface water while wading through flood waters, residents and commercial/industrial workers were not identified as potential human receptors for surface water in the risk assessment. Potential exposure during flooding is not a long-term exposure scenario, and it is assumed that evaluation of potential recreationist, outdoor worker, and angler/sportsman exposures (which have greater exposure frequencies and durations) are protective of short-term exposures of residents and commercial/industrial workers during periodic flooding.

2- Sediment data were separated in to two data sets: "surface sediment" (0-15cm below the sediment-water interface) and "all sediment" (all sediment samples regardless of depth). The surface sediment data set was used to evaluate the potential for exposure and associated health risks under the current/future scenario for receptors engaged in non-intrusive activities (i.e. recreationist, angler/sportsman). The all sediment data set was used to evaluate the potential for exposure and associated health risks under the current/future scenario for receptors potentially engaged in intrusive activities (i.e. outdoor workers) and, depending on the results of the sediment transport modeling, under a hypothetical future scenario in which receptors engaged in non-intrusive activities are exposed to subsurface sediments brought to the surface by channel scouring.

3 - Floodplain soil data were separated into two data sets: "surface soil" (0-30cm below ground surface) and "all soil" (all soil samples, regardless of depth). The surface soil data set was used to evaluate the potential for exposure and associated health risks under the current/future scenario for receptors engaged in non-intrusive activities (i.e. recreationist, angler/sportsman, commercial/industrial workers). The all soil data set was used to evaluate the potential fo rexposure and associated health risks under the current/future scenario for receptors potentially engaged in intrusive activities (i.e. outdoor worker, resident, construction/utility worker).

4 - For the purposes of the risk assessment, a distinction was made between an angler and sportsman. Anglers might consume their catch, while sportsmen fish for sport and release their catch.

5 - Outdoor workers may also be construction/utility workers who perform construction or maintenance work on underground utilities crossing the brook. The potential for this exposure scenario will be considered on an exposure unit by exposure unit basis and will be quantitatively evaluated, as applicable.

Table 3
Non-Carcinogenic Toxicity Data Summary

Pathway: Ingestion/Dermal

Chemicals of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Absorp. Efficiency (Dermal)	Adjusted RfD (Dermal)	Adj. Dermal RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfD
Total PCB Aroclors	Chronic	2.00E-05	mg/kg-day	1	2.00E-05	mg/kg-day	Eye effects; finger and toe nail effects; immunological effects	300	IRIS	11/1/2012

Pathway: Inhalation

Chemicals of Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Inhalation RfD (If available)	Inhalation RfD Units (If available)	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfC
Total PCB Aroclors	--	NA	--	NA	N/A	NA	NA	N/A	N/A

Summary of Toxicity Assessment

This table provides non-carcinogenic risk information which is relevant to the contaminants of concern. When available, the chronic toxicity data have been used to develop oral reference doses (RfDs) and inhalation reference concentrations (RfCs).

N/A: Not Applicable
NA: Not Available
IRIS: Integrated Risk Information System, U.S. EPA

Table 4
Cancer Toxicity Data Summary

Pathway: Ingestion/ Dermal

Chemical of Concern	Oral Cancer Slope Factor	Units	Adjusted Cancer Slope Factor (for Dermal)	Slope Factor Units	Weight of Evidence/ Cancer Guideline	Source	Date
Benzidine	2.30E+02	$(mg/kg\text{-}day)^{-1}$	2.30E+02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	11/1/2012
Total PCB Aroclors	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/1/2012

Pathway: Inhalation

Chemical of Concern	Unit Risk	Units	Inhalation Cancer Slope Factor	Slope Factor Units	Weight of Evidence/ Cancer Guideline	Source	Date
Benzidine	6.70E-02	$(mg/m^3)^{-1}$	--	--	A	IRIS	11/1/2012
Total PCB Aroclors	1.00E-04	$(\mu g/m^3)^{-1}$	--	--	B2	IRIS	11/1/2012

Key:
IRIS: Integrated Risk Information System. U.S. EPA
A - Human carcinogen
B2 - Probable Human Carcinogen-Indicates sufficient evidence in animals associated with the site and inadequate or no evidence in hur

Summary of Toxicity Assessment

This table provides carcinogenic risk information which is relevant to the contaminants of concern. Toxicity data are provided for both the oral and inhalation routes of exposure.

Table 5
Risk Characterization Summary - Non-Carcinogens

Scenario Timeframe : Current/Future (Tables 10.2)
Receptor Population : Recreationist/Sportsman
Receptor Age : Adolescent

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Surface Sediment	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	8E-01	N/A	1E+00	2E+00
			Chemical Total		8E-01	--	1E+00	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Floodplain Soil	Surface Soil	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	1E+00	N/A	8E-01	2E+00
			Chemical Total		1E+00	--	8E-01	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
EU Receptor Total								4E+00
Floodplain Soil	Surface Soil	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	1E+00	3E+00
			Chemical Total		2E+00	--	1E+00	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Scenario Timeframe : Current/Future (Tables 10.3)
Receptor Population : Angler
Receptor Age : Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Biota	Predatory Fish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	N/A	2E+01
			Chemical Total		2E+01	--	--	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Biota	Bottom-Feeding Fish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	3E+02	N/A	N/A	3E+02
			Chemical Total		3E+02	--	--	3E+02
		Exposure Point Total						3E+02
	Exposure Medium Total							3E+02
Medium Total								3E+02
Biota	Asiatic Clams	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Biota	Predatory Fish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	N/A	2E+01
			Chemical Total		2E+01	--	--	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Biota	Bottom-Feeding Fish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	3E+02	N/A	N/A	3E+02
			Chemical Total		3E+02	--	--	3E+02
		Exposure Point Total						3E+02
	Exposure Medium Total							3E+02
Medium Total								3E+02
Biota	Asiatic Clams	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Biota	Predatory Fish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	N/A	2E+01
			Chemical Total		2E+01	--	--	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Biota	Bottom-Feeding Fish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	2E+02	N/A	N/A	2E+02
			Chemical Total		2E+02	--	--	2E+02

		Exposure Point Total						2E+02
	Exposure Medium Total							2E+02
Medium Total								2E+02
Biota	Asiatic Clams	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Biota	Predatory Fish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	4E+01	N/A	N/A	4E+01
			Chemical Total		4E+01	--	--	4E+01
		Exposure Point Total						4E+01
	Exposure Medium Total							4E+01
Medium Total								4E+01
Biota	Bottom-Feeding Fish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	7E+01	N/A	N/A	7E+01
			Chemical Total		7E+01	--	--	7E+01
		Exposure Point Total						7E+01
	Exposure Medium Total							7E+01
Medium Total								7E+01
Biota	Asiatic Clams	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Biota	Predatory Fish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	4E+01	N/A	N/A	4E+01
			Chemical Total		4E+01	--	--	4E+01
		Exposure Point Total						4E+01
	Exposure Medium Total							4E+01
Medium Total								4E+01
Biota	Bottom-Feeding Fish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	7E+01	N/A	N/A	7E+01
			Chemical Total		7E+01	--	--	7E+01
		Exposure Point Total						7E+01
	Exposure Medium Total							7E+01
Medium Total								7E+01
Biota	Asiatic Clams	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Biota	Predatory Fish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	5E+01	N/A	N/A	5E+01
			Chemical Total		5E+01	--	--	5E+01
		Exposure Point Total						5E+01
	Exposure Medium Total							5E+01
Medium Total								5E+01
Biota	Bottom-Feeding Fish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	2E+02	N/A	N/A	2E+02
			Chemical Total		2E+02	--	--	2E+02
		Exposure Point Total						2E+02
	Exposure Medium Total							2E+02
Medium Total								2E+02
Biota	Asiatic Clams	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Biota	Predatory Fish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00

Medium Total								4E+00
Biota	Bottom-Feeding Fish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	1E+02	N/A	N/A	1E+02
			Chemical Total		1E+02	--	--	1E+02
		Exposure Point Total						1E+02
	Exposure Medium Total							1E+02
Medium Total								1E+02
Biota	Crayfish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Predatory Fish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	1E+01	N/A	N/A	1E+01
			Chemical Total		1E+01	--	--	1E+01
		Exposure Point Total						1E+01
	Exposure Medium Total							1E+01
Medium Total								1E+01
Biota	Bottom-Feeding Fish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	1E+02	N/A	N/A	1E+02
			Chemical Total		1E+02	--	--	1E+02
		Exposure Point Total						1E+02
	Exposure Medium Total							1E+02
Medium Total								1E+02
Biota	Asiatic Clams	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Scenario Timeframe : Current/Future (Tables 10.4)
Receptor Population : Angler
Receptor Age : Adolescent

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Biota	Predatory Fish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	N/A	2E+01
			Chemical Total		2E+01	--	--	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Biota	Bottom-Feeding Fish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	3E+02	N/A	N/A	3E+02
			Chemical Total		3E+02	--	--	3E+02
		Exposure Point Total						3E+02
	Exposure Medium Total							3E+02
Medium Total								3E+02
Biota	Asiatic Clams	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Biota	Predatory Fish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	N/A	2E+01
			Chemical Total		2E+01	--	--	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Biota	Bottom-Feeding Fish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	3E+02	N/A	N/A	3E+02
			Chemical Total		3E+02	--	--	3E+02
		Exposure Point Total						3E+02
	Exposure Medium Total							3E+02
Medium Total								3E+02
Biota	Asiatic Clams	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Biota	Predatory Fish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	N/A	2E+01
			Chemical Total		2E+01	--	--	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Biota	Bottom-Feeding Fish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	2E+02	N/A	N/A	2E+02
			Chemical Total		2E+02	--	--	2E+02
		Exposure Point Total						2E+02
	Exposure Medium Total							2E+02
Medium Total								2E+02
Biota	Asiatic Clams	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Biota	Predatory Fish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	4E+01	N/A	N/A	4E+01
			Chemical Total		4E+01	--	--	4E+01
		Exposure Point Total						4E+01
	Exposure Medium Total							4E+01
Medium Total								4E+01
Biota	Bottom-Feeding Fish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	7E+01	N/A	N/A	7E+01
			Chemical Total		7E+01	--	--	7E+01
		Exposure Point Total						7E+01
	Exposure Medium Total							7E+01
Medium Total								7E+01
Biota	Asiatic Clams	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Biota	Predatory Fish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	4E+01	N/A	N/A	4E+01
			Chemical Total		4E+01	--	--	4E+01
		Exposure Point Total						4E+01
	Exposure Medium Total							4E+01
Medium Total								4E+01
Biota	Bottom-Feeding Fish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	7E+01	N/A	N/A	7E+01
			Chemical Total		7E+01	--	--	7E+01
		Exposure Point Total						7E+01
	Exposure Medium Total							7E+01
Medium Total								7E+01
Biota	Asiatic Clams	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Sediment	Surface Sediment	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	8E-01	N/A	1E+00	2E+00
			Chemical Total		8E-01	--	1E+00	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
Floodplain Soil	Surface Soil	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	1E+00	N/A	8E-01	2E+00
			Chemical Total		1E+00	--	8E-01	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
EU Receptor Total: Abiotic Media Only								4E+00
Biota	Predatory Fish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	5E+01	N/A	N/A	5E+01
			Chemical Total		5E+01	--	--	5E+01
		Exposure Point Total						5E+01
	Exposure Medium Total							5E+01
Medium Total								5E+01
EU Receptor Total: Abiotic Media + Predatory Fish Fillet								5E+01
Biota	Bottom-Feeding Fish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	2E+02	N/A	N/A	2E+02

			Chemical Total		2E+02	--	--	2E+02
		Exposure Point Total						2E+02
	Exposure Medium Total							2E+02
Medium Total								2E+02
EU Receptor Total: Abiotic Media + Bottom-feeding Fish Fillet								2E+02
Biota	Asiatic Clams	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
EU Receptor Total: Abiotic Media + Asiatic Clams								7E+00
Biota	Crayfish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00
EU Receptor Total: Abiotic Media + Crayfish								6E+00
Floodplain Soil	Surface Soil	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	1E+00	3E+00
			Chemical Total		2E+00	--	1E+00	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Predatory Fish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
EU Receptor Total: Abiotic Media + Predatory Fish Fillet								6E+00
Biota	Bottom-Feeding Fish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	9E+01	N/A	N/A	9E+01
			Chemical Total		9E+01	--	--	9E+01
		Exposure Point Total						9E+01
	Exposure Medium Total							9E+01
Medium Total								9E+01
EU Receptor Total: Abiotic Media + Bottom-feeding Fish Fillet								9E+01
Biota	Crayfish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
EU Receptor Total: Abiotic Media + Crayfish								6E+00
Biota	Predatory Fish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	1E+01	N/A	N/A	1E+01
			Chemical Total		1E+01	--	--	1E+01
		Exposure Point Total						1E+01
	Exposure Medium Total							1E+01
Medium Total								1E+01
Biota	Bottom-Feeding Fish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	1E+02	N/A	N/A	1E+02
			Chemical Total		1E+02	--	--	1E+02
		Exposure Point Total						1E+02
	Exposure Medium Total							1E+02
Medium Total								1E+02
Biota	Asiatic Clams	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Biota	Crayfish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	N/A	2E+00
			Chemical Total		2E+00	--	--	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Scenario Timeframe : Current/Future (Tables 10.5)
Receptor Population : Angler
Receptor Age : Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Biota	Predatory Fish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	3E+01	N/A	N/A	3E+01
			Chemical Total		3E+01	--	--	3E+01
		Exposure Point Total						3E+01
	Exposure Medium Total							3E+01
Medium Total								3E+01
Biota	Bottom-Feeding Fish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	4E+02	N/A	N/A	4E+02
			Chemical Total		4E+02	--	--	4E+02
		Exposure Point Total						4E+02
	Exposure Medium Total							4E+02
Medium Total								4E+02
Biota	Asiatic Clams	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00

		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Biota	Crayfish	EU GB	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Biota	Predatory Fish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	3E+01	N/A	N/A	3E+01
			Chemical Total		3E+01	--	--	3E+01
		Exposure Point Total						3E+01
	Exposure Medium Total							3E+01
Medium Total								3E+01
Biota	Bottom-Feeding Fish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	4E+02	N/A	N/A	4E+02
			Chemical Total		4E+02	--	--	4E+02
		Exposure Point Total						4E+02
	Exposure Medium Total							4E+02
Medium Total								4E+02
Biota	Asiatic Clams	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Biota	Crayfish	EU BB1	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Biota	Predatory Fish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	3E+01	N/A	N/A	3E+01
			Chemical Total		3E+01	--	--	3E+01
		Exposure Point Total						3E+01
	Exposure Medium Total							3E+01
Medium Total								3E+01
Biota	Bottom-Feeding Fish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	3E+02	N/A	N/A	3E+02
			Chemical Total		3E+02	--	--	3E+02
		Exposure Point Total						3E+02
	Exposure Medium Total							3E+02
Medium Total								3E+02
Biota	Asiatic Clams	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Biota	Crayfish	EU BB2	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Biota	Predatory Fish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	6E+01	N/A	N/A	6E+01
			Chemical Total		6E+01	--	--	6E+01
		Exposure Point Total						6E+01
	Exposure Medium Total							6E+01
Medium Total								6E+01
Biota	Bottom-Feeding Fish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	1E+02	N/A	N/A	1E+02
			Chemical Total		1E+02	--	--	1E+02
		Exposure Point Total						1E+02
	Exposure Medium Total							1E+02
Medium Total								1E+02
Biota	Asiatic Clams	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Biota	Crayfish	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Biota	Predatory Fish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	6E+01	N/A	N/A	6E+01
			Chemical Total		6E+01	--	--	6E+01
		Exposure Point Total						6E+01
	Exposure Medium Total							6E+01
Medium Total								6E+01
Biota	Bottom-Feeding Fish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	1E+02	N/A	N/A	1E+02
			Chemical Total		1E+02	--	--	1E+02
		Exposure Point Total						1E+02

	Exposure Medium Total							1E+02
Medium Total								1E+02
Biota	Asiatic Clams	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Biota	Crayfish	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Biota	Predatory Fish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	8E+01	N/A	N/A	8E+01
			Chemical Total		8E+01	--	--	8E+01
		Exposure Point Total						8E+01
	Exposure Medium Total							8E+01
Medium Total								8E+01
Biota	Bottom-Feeding Fish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	3E+02	N/A	N/A	3E+02
			Chemical Total		3E+02	--	--	3E+02
		Exposure Point Total						3E+02
	Exposure Medium Total							3E+02
Medium Total								3E+02
Biota	Asiatic Clams	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Biota	Crayfish	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Biota	Predatory Fish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	6E+00	N/A	N/A	6E+00
			Chemical Total		6E+00	--	--	6E+00
		Exposure Point Total						6E+00
	Exposure Medium Total							6E+00
Medium Total								6E+00
Biota	Bottom-Feeding Fish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	2E+02	N/A	N/A	2E+02
			Chemical Total		2E+02	--	--	2E+02
		Exposure Point Total						2E+02
	Exposure Medium Total							2E+02
Medium Total								2E+02
Biota	Crayfish	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00

Biota	Predatory Fish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	N/A	2E+01
			Chemical Total		2E+01	--	--	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Biota	Bottom-Feeding Fish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	2E+02	N/A	N/A	2E+02
			Chemical Total		2E+02	--	--	2E+02
		Exposure Point Total						2E+02
	Exposure Medium Total							2E+02
Medium Total								2E+02
Biota	Asiatic Clams	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	N/A	4E+00
			Chemical Total		4E+00	--	--	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Biota	Crayfish	EU SL	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	N/A	3E+00
			Chemical Total		3E+00	--	--	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00

Scenario Timeframe : Current/Future (Tables 10.7)
Receptor Population : Resident
Receptor Age : Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Floodplain Soil	All Soil	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	1E+00	N/A	8E-01	2E+00
			Chemical Total		1E+00	--	8E-01	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00

Medium Total								2E+00
Floodplain Soil	All Soil	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	1E+00	3E+00
			Chemical Total		2E+00	--	1E+00	3E+00
		Exposure Point Total						3E+00
	Exposure Medium Total							3E+00
Medium Total								3E+00
Floodplain Soil	All Soil	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	4E+00	N/A	2E+00	6E+00
			Chemical Total		4E+00	--	2E+00	6E+00
		Exposure Point Total						6E+00
	Exposure Medium Total							6E+00
Medium Total								6E+00

Scenario Timeframe : Current/Future (Tables 10.8)
Receptor Population : Resident
Receptor Age : Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Floodplain Soil	All Soil	EU BB3	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	1E+00	4E+00
			Chemical Total		3E+00	--	1E+00	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Floodplain Soil	All Soil	EU BB4	Total PCB Aroclors	Eye; Nails; Immunological	1E+01	N/A	5E+00	2E+01
			Chemical Total		1E+01	--	5E+00	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01
Floodplain Soil	All Soil	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	2E+01	N/A	8E+00	3E+01
			Chemical Total		2E+01	--	8E+00	3E+01
		Exposure Point Total						3E+01
	Exposure Medium Total							3E+01
Medium Total								3E+01
Floodplain Soil	All Soil	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	4E+01	N/A	2E+01	6E+01
			Chemical Total		4E+01	--	2E+01	6E+01
		Exposure Point Total						6E+01
	Exposure Medium Total							6E+01
Medium Total								6E+01

Scenario Timeframe : Current/Future (Tables 10.9)
Receptor Population : Commercial/Industrial Worker
Receptor Age : Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Floodplain Soil	Surface Soil	EU BB5	Total PCB Aroclors	Eye; Nails; Immunological	2E+00	N/A	2E+00	4E+00
			Chemical Total		2E+00	--	2E+00	4E+00
		Exposure Point Total						4E+00
	Exposure Medium Total							4E+00
Medium Total								4E+00
Floodplain Soil	Surface Soil	EU BB6	Total PCB Aroclors	Eye; Nails; Immunological	3E+00	N/A	3E+00	6E+00
			Chemical Total		3E+00	--	3E+00	6E+00
		Exposure Point Total						6E+00
	Exposure Medium Total							6E+00
Medium Total								6E+00

Summary of Risk Characterization - Non-Carcinogens

The table presents hazard quotients (HQs) for each route of exposure and the hazard index (sum of hazard quotients) for all routes of exposure. The Risk Assessment Guidance for Superfund states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse non-cancer effects. The HI for both surface soils and surface and subsurface soils is less than 1. The HI for groundwater exceeds the benchmark of 1, and is driven by Arsenic. The HI value represents the sum of the HQ values for all COPCs; therefore, it is greater than the HQ for Arsenic.

Note on PCBs: In some cases, both PCB Aroclors and PCB congeners were analyzed for the same media (e.g., fish tissue). In the BHHRA, risks were calculated for both total PCB Aroclors and PCB congeners according to EPA practice of assessing mixtures of dioxins/furans and PCBs that exhibit dioxin-like toxicity on the basis of their predicted toxicities (TEQ) relative to what is known about the toxicity of 2,3,7,8-tetrachlorodibenzo(p)dioxin (TCDD). Twelve PCB congeners and seventeen dioxin/furan congeners have been assigned 2,3,7,8-TCDD toxic equivalence factors (TEF) according to the 2005 World Health Organization (WHO) toxic equivalence (TEQ) weighting scheme for mammals and the Van der Berg et al. weighting schemes for fish and birds. Within a fish tissue or surface water sample, detected concentrations of the twelve PCB congeners with dioxin-like toxicity were multiplied by the congener-specific TEF, and the sum of the adjusted concentrations was calculated as “TCDD TEQ (PCBs)”. The noncancer risks posed by TCDD TEQ (PCBs) were comparable (within an order of magnitude) to those from total PCB Aroclors indicating the Aroclor data is sufficient for predicting risk. Therefore, only noncancer hazard from PCB Aroclors are presented here. Consult the BHHRA in the administrative record for additional information

Table 6
Risk Characterization Summary - Carcinogens

Scenario Timeframe: Current/Future (Tables 10.1)
Receptor Population: Recreationist/Sportsman
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Surface Sediment	EU BB5	Benzidine	6E-05	N/A	2E-04	3E-04
			Chemical Total	6E-05	--	2E-04	3E-04
		Exposure Point Total					3E-04
	Exposure Medium Total						3E-04
Medium Total							3E-04

Scenario Timeframe: Current/Future (Tables 10.3)
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Biota	Predatory Fish	EU GB	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04
	Exposure Medium Total						4E-04
Medium Total							4E-04
Biota	Bottom-feeding Fish	EU GB	Total PCB Aroclors	5E-03	N/A	N/A	5E-03
			Chemical Total	5E-03	--	N/A	5E-03
		Exposure Point Total					5E-03
	Exposure Medium Total						5E-03
Medium Total							5E-03

Biota	Predatory Fish	EU BB1	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04
	Exposure Medium Total						4E-04
Medium Total							4E-04
EU Receptor Total: Abiotic Media + Predatory Fish Fillet							4E-04
Biota	Bottom-feeding fish	EU BB1	Total PCB Aroclors	5E-03	N/A	N/A	5E-03
			Chemical Total	5E-03	--	N/A	5E-03
		Exposure Point Total					5E-03
	Exposure Medium Total						5E-03
Medium Total							5E-03

Biota	Predatory Fish	EU BB2	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04
	Exposure Medium Total						4E-04
Medium Total							4E-04
Biota	Bottom-feeding fish	EU BB2	Total PCB Aroclors	4E-03	N/A	N/A	4E-03
			Chemical Total	4E-03	--	N/A	4E-03
		Exposure Point Total					4E-03
	Exposure Medium Total						4E-03

Medium Total							4E-03

Biota	Predatory Fish	EU BB3	Total PCB Aroclors	7E-04	N/A	N/A	7E-04
			Chemical Total	7E-04	--	N/A	7E-04
		Exposure Point Total					7E-04
	Exposure Medium Total						7E-04
Medium Total							7E-04
Biota	Bottom-feeding fish	EU BB3	Total PCB Aroclors	1E-03	N/A	N/A	1E-03
			Chemical Total	1E-03	--	N/A	1E-03
		Exposure Point Total					1E-03
	Exposure Medium Total						1E-03
Medium Total							1E-03

Biota	Predatory Fish	EU BB4	Total PCB Aroclors	7E-04	N/A	N/A	7E-04
			Chemical Total	7E-04	--	N/A	7E-04
		Exposure Point Total					7E-04
	Exposure Medium Total						7E-04
Medium Total							7E-04
Biota	Bottom-feeding fish	EU BB4	Total PCB Aroclors	1E-03	N/A	N/A	1E-03
			Chemical Total	1E-03	--	N/A	1E-03
		Exposure Point Total					1E-03
	Exposure Medium Total						1E-03
Medium Total							1E-03

Sediment	Surface Sediment	EU BB5	Benzidine	6E-05	N/A	2E-04	3E-04
			Chemical Total	6E-05	--	2E-04	3E-04
		Exposure Point Total					3E-04
	Exposure Medium Total						3E-04
Medium Total							3E-04
Biota	Predatory Fish	EU BB5	Total PCB Aroclors	1E-03	N/A	N/A	1E-03
			Chemical Total	1E-03	--	N/A	1E-03
		Exposure Point Total					1E-03
	Exposure Medium Total						1E-03
Medium Total							1E-03
EU Receptor Total: Abiotic Media + Predatory Fish							1E-03
Biota	Bottom-feeding fish	EU BB5	Total PCB Aroclors	4E-03	N/A	N/A	4E-03
			Chemical Total	4E-03	--	N/A	4E-03
		Exposure Point Total					4E-03
	Exposure Medium Total						4E-03
Medium Total							4E-03
EU Receptor Total: Abiotic Media + Bottom-feeding fish							4E-03

Biota	Bottom-feeding fish	EU BB6	Total PCB Aroclors	2E-03	N/A	N/A	2E-03
			Chemical Total	2E-03	--	N/A	2E-03
		Exposure Point Total					2E-03
	Exposure Medium Total						2E-03
Medium Total							2E-03

Biota	Predatory Fish	EU SL	Total PCB Aroclors	2E-04	N/A	N/A	2E-04
			Chemical Total	2E-04	--	N/A	2E-04
		Exposure Point Total					2E-04
	Exposure Medium Total						2E-04
Medium Total							2E-04
Biota	Bottom-feeding Fish	EU SL	Total PCB Aroclors	2E-03	N/A	N/A	2E-03

			Chemical Total	2E-03	--	N/A	2E-03
		Exposure Point Total					2E-03
	Exposure Medium Total						2E-03
Medium Total							2E-03

Scenario Timeframe: Current/Future (Tables 10.4)
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Biota	Bottom-feeding Fish	EU GB	Total PCB Aroclors	2E-03	N/A	N/A	2E-03
			Chemical Total	2E-03	--	N/A	2E-03
		Exposure Point Total					2E-03
	Exposure Medium Total						2E-03
Medium Total							2E-03
Biota	Bottom-feeding fish	EU BB1	Total PCB Aroclors	2E-03	N/A	N/A	2E-03
			Chemical Total	2E-03	--	N/A	2E-03
		Exposure Point Total					2E-03
	Exposure Medium Total						2E-03
Medium Total							2E-03
Biota	Bottom-feeding fish	EU BB2	Total PCB Aroclors	1E-03	N/A	N/A	1E-03
			Chemical Total	1E-03	--	N/A	1E-03
		Exposure Point Total					1E-03
	Exposure Medium Total						1E-03
Medium Total							1E-03
Biota	Predatory Fish	EU BB3	Total PCB Aroclors	2E-04	N/A	N/A	2E-04
			Chemical Total	2E-04	--	N/A	2E-04
		Exposure Point Total					2E-04
	Exposure Medium Total						2E-04
Medium Total							2E-04
Biota	Bottom-feeding fish	EU BB3	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04
	Exposure Medium Total						4E-04
Medium Total							4E-04
Biota	Predatory Fish	EU BB4	Total PCB Aroclors	2E-04	N/A	N/A	2E-04
			Chemical Total	2E-04	--	N/A	2E-04
		Exposure Point Total					2E-04
	Exposure Medium Total						2E-04
Medium Total							2E-04
Biota	Bottom-feeding fish	EU BB4	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04
	Exposure Medium Total						4E-04
Medium Total							4E-04
Biota	Predatory Fish	EU BB5	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04

	Exposure Medium Total						4E-04
Medium Total							4E-04
Biota	Bottom-feeding fish	EU BB5	Total PCB Aroclors	1E-03	N/A	N/A	1E-03
			Chemical Total	1E-03	--	N/A	1E-03
		Exposure Point Total					1E-03
	Exposure Medium Total						1E-03
Medium Total							1E-03
Biota	Bottom-feeding fish	EU BB6	Total PCB Aroclors	6E-04	N/A	N/A	6E-04
			Chemical Total	6E-04	--	N/A	6E-04
		Exposure Point Total					6E-04
	Exposure Medium Total						6E-04
Medium Total							6E-04
Biota	Bottom-feeding fish	EU SL	Total PCB Aroclors	7E-04	N/A	N/A	7E-04
			Chemical Total	7E-04	--	N/A	7E-04
		Exposure Point Total					7E-04
	Exposure Medium Total						7E-04
Medium Total							7E-04

Scenario Timeframe: Current/Future (Tables 10.5)
Receptor Population: Angler
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Biota	Bottom-feeding Fish	EU GB	Total PCB Aroclors	2E-03	N/A	N/A	2E-03
			Chemical Total	2E-03	--	--	2E-03
		Exposure Point Total					2E-03
	Exposure Medium Total						2E-03
Medium Total							2E-03
Biota	Bottom-feeding Fish	EU BB1	Total PCB Aroclors	2E-03	N/A	N/A	2E-03
			Chemical Total	2E-03	--	--	2E-03
		Exposure Point Total					2E-03
	Exposure Medium Total						2E-03
Medium Total							2E-03
Biota	Bottom-feeding Fish	EU BB2	Total PCB Aroclors	1E-03	N/A	N/A	1E-03
			Chemical Total	1E-03	--	--	1E-03
		Exposure Point Total					1E-03
	Exposure Medium Total						1E-03
Medium Total							1E-03
Biota	Predatory Fish	EU BB3	Total PCB Aroclors	2E-04	N/A	N/A	2E-04
			Chemical Total	2E-04	--	--	2E-04
		Exposure Point Total					2E-04
	Exposure Medium Total						2E-04
Medium Total							2E-04
Biota	Bottom-feeding fish	EU BB3	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04
	Exposure Medium Total						4E-04
Medium Total							4E-04

Biota	Predatory Fish	EU BB4	Total PCB Aroclors	2E-04	N/A	N/A	2E-04
			Chemical Total	2E-04	--	N/A	2E-04
		Exposure Point Total					2E-04
	Exposure Medium Total						2E-04
Medium Total							2E-04
Biota	Bottom-feeding fish	EU BB4	Total PCB Aroclors	4E-04	N/A	N/A	4E-04
			Chemical Total	4E-04	--	N/A	4E-04
		Exposure Point Total					4E-04
	Exposure Medium Total						4E-04
Medium Total							4E-04
Biota	Predatory Fish	EU BB5	Total PCB Aroclors	3E-04	N/A	N/A	3E-04
			Chemical Total	3E-04	--	--	3E-04
		Exposure Point Total					3E-04
	Exposure Medium Total						3E-04
Medium Total							3E-04
Biota	Bottom-feeding fish	EU BB5	Total PCB Aroclors	1E-03	N/A	N/A	1E-03
			Chemical Total	1E-03	--	--	1E-03
		Exposure Point Total					1E-03
	Exposure Medium Total						1E-03
Medium Total							1E-03
Biota	Bottom-feeding fish	EU BB6	Total PCB Aroclors	5E-04	N/A	N/A	5E-04
			Chemical Total	5E-04	--	--	5E-04
		Exposure Point Total					5E-04
	Exposure Medium Total						5E-04
Medium Total							5E-04
Biota	Bottom-feeding fish	EU SL	Total PCB Aroclors	5E-04	N/A	N/A	5E-04
			Chemical Total	5E-04	--	--	5E-04
		Exposure Point Total					5E-04
	Exposure Medium Total						5E-04
Medium Total							5E-04

Scenario Timeframe: Current/Future (Tables 10.7)
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Floodplain Soil	All Soil	EU BB5	Total PCB Aroclors	1E-04	1E-09	5E-05	2E-04
			Chemical Total	1E-04	1E-09	5E-05	2E-04
		Exposure Point Total					2E-04
	Exposure Medium Total						2E-04
Medium Total							2E-04
Floodplain Soil	All Soil	EU BB6	Total PCB Aroclors	2E-04	2E-09	9E-05	3E-04
			Chemical Total	2E-04	2E-09	9E-05	3E-04
		Exposure Point Total					3E-04
	Exposure Medium Total						3E-04
Medium Total							3E-04

Scenario Timeframe: Current/Future (Tables 10.8) Receptor Population: Resident Receptor Age: Child							
Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Floodplain Soil	All Soil	EU BB6	Total PCB Aroclors	1E-04	4E-10	5E-05	2E-04
			Chemical Total	1E-04	4E-10	5E-05	2E-04
		Exposure Point Total					2E-04
	Exposure Medium Total						2E-04
Medium Total							2E-04

Summary of Risk Characterization - Carcinogens

The table presents cancer risks for each route of exposure and for all routes of exposure combined. As stated in the National Contingency Plan, the acceptable risk range for site-related exposure is 1×10^{-6} (1 in 1 million) to $1x\ 10^{-4}$ (1 in 10,000).

Note on benzdine: Due to uncertainties related to analytical detection limits, the benzidine results from a 1997 sampling effort were confirmed with additional samples collected on August 18, 2014. Concentrations ranged from non-detect to 3 mg/kg in BB5, adjacent to the CDE drainage outfall. By comparison, the 1997 data showed concentrations ranging from 4.6 to 81 mg/kg, which resulted in unacceptable cancer risks for the adolescent and adult recreationists/sportsmen in BB1-BB6. The risks posed by the 2014 data are presented here. They can be found in the September 26, 2014 "Supplemental Risk Evaluation for Benzidine." For risks from the 1997 data, consult the BHHRA in the administrative record.

Note on PCBs: In some cases, both PCB Aroclors and PCB congeners were analyzed for the same media (e.g., fish tissue). In the BHHRA, risks were calculated for both total PCB Aroclors and PCB congeners according to EPA practice of assessing mixtures of dioxins/furans and PCBs that exhibit dioxin-like toxicity on the basis of their predicted toxicities (TEQ) relative to what is known about the toxicity of 2,3,7,8-tetrachlorodibenzo(p)dioxin (TCDD). Twelve PCB congeners and seventeen dioxin/furan congeners have been assigned 2,3,7,8-TCDD toxic equivalence factors (TEF) according to the 2005 World Health Organization (WHO) toxic equivalence (TEQ) weighting scheme for mammals and the Van der Berg et al. weighting schemes for fish and birds. Within a fish tissue or surface water sample, detected concentrations of the twelve PCB congeners with dioxin-like toxicity were multiplied by the congener-specific TEF, and the sum of the adjusted concentrations was calculated as “TCDD TEQ (PCBs)”. The cancer risks posed by TCDD TEQ (PCBs) were comparable (within an order of magnitude) to those from total PCB Aroclors indicating the Aroclor data is sufficient for predicting risk. Therefore, only risk from PCB Aroclors are presented here. Consult the BHHRA in the administrative record for additional information.

Table 7-1: Summary Ecological Risks for Sediment - Benthic Invertebrates and Aquatic Life [1]
Cornell-Dubilier Electronics Superfund Site: OU4 Bound Brook

<table>
<tr><th rowspan="2">Receptor</th><th rowspan="2" colspan="2">Line of Evidence</th><th colspan="8">Exposure Unit</th></tr>
<tr><th>EU BG</th><th>EU BB1</th><th>EU BB2</th><th>EU BB3</th><th>EU BB4</th><th>EU BB5</th><th>EU BB6</th><th>EU SL</th></tr>
<tr><td rowspan="6">Benthic Invertebrates</td><td colspan="2">Comparison of surface sediment data to protective screening concentrations</td><td></td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Vinyl chloride
Total PCBs</td><td>Total PCBs</td><td></td></tr>
<tr><td colspan="2">Comparison of porewater data to protective screening concentrations [2]</td><td></td><td></td><td></td><td></td><td></td><td>cis-1,2-DCE
Vinyl chloride
Total PCBs</td><td></td><td></td></tr>
<tr><td rowspan="2">Comparison of tissue residue data to critical body residues</td><td>Asiatic clam</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td></td><td>Total PCBs</td></tr>
<tr><td>Crayfish</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Total PCBs</td><td></td></tr>
<tr><td colspan="2">Sediment Toxicity</td><td>N/A</td><td>Toxic</td><td>Toxic</td><td>Toxic</td><td>N/A</td><td>Toxic</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="2">PCB Bioaccumulation</td><td>N/A</td><td>Bioavailable</td><td></td><td></td><td>N/A</td><td>Bioavailable</td><td>N/A</td><td>N/A</td></tr>
<tr><td rowspan="7">Aquatic Life</td><td colspan="2">Comparison of surface water data to protective screening concentrations [3]</td><td colspan="8">Total PCBs</td></tr>
<tr><td colspan="2">Comparison of porewater data to protective screening concentrations [2]</td><td></td><td></td><td></td><td></td><td></td><td>cis-1,2-DCE
Vinyl chloride
Total PCBs</td><td></td><td></td></tr>
<tr><td rowspan="4">Comparison of tissue residue data to critical body residues</td><td>Predatory fish</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td></tr>
<tr><td>Bottom-feeding fish</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td><td>Total PCBs</td></tr>
<tr><td>Predatory fish eggs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Bottom-feeding fish eggs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Fish Condition Factor</td><td>NA</td><td>Good</td><td>Good</td><td>Good</td><td>Good</td><td>Good</td><td>Good</td><td>Good</td></tr>
</table>

Notes:
1 For site-related contaminants (*i.e.* , PCBs and chlorinated solvents) only
2 Although porewater samples were only collected from EUs BB4, BB5, and BB6, exceedences occurred at EU BB5
3 Surface water data were evaluated system-wide
NA = not available
N/A = not applicable

Exposure Unit (EU) Abbreviations:
GB = Green Brook (RM -1.58 to 0)
BB1 = Bound Brook (RM 0 to 3.43)
BB2 = Bound Brook (RM 3.43 to 4.09)
BB3 = Bound Brook (RM 4.09 to 5.22)
BB4 = Bound Brook (RM 5.22 to RM 6.18)
BB5 = Bound Brook (RM 6.18 to 6.82)
BB6 = Bound Brook (RM 6.82 to RM 8.31)
SL = Spring Lake

Table 7-2: Summary Ecological Risks for Sediment - Semi-Aquatic Wildlife Receptors [1]
Cornell-Dubilier Electronics Superfund Site: OU4 Bound Brook

Receptor		Line of Evidence		Exposure Unit							
				EU BG	EU BB1	EU BB2	EU BB3	EU BB4	EU BB5	EU BB6	EU SL
Semi-Aquatic Wildlife Receptors	Herbivorous Birds	Comparison of modeled intakes to toxicity reference values	Wood duck								
	Insectivorous Birds	Comparison of modeled intakes to toxicity reference values	Mallard								
			Red-winged blackbird								
	Piscivorous Birds	Comparison of modeled intakes to toxicity reference values	Great blue heron	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs		
			Belted kingfisher	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs TCDD TEQ (PCBs)	Total PCBs	Total PCBs
		Comparison of estimated concentrations in fish eggs to critical egg residues	Based on predatory fish	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)
			Based on bottom-feeding fish	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)
	Herbivorous Mammals	Comparison of modeled intakes to toxicity reference values	Muskrat								
	Insectivorous Mammals	Comparison of modeled intakes to toxicity reference values	Raccoon								
			Little brown bat	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)		TCDD TEQ (PCBs)
	Piscivorous Mammals	Comparison of modeled intakes to toxicity reference values	American mink	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs	Total PCBs TCDD TEQ (PCBs)	Total PCBs	Total PCBs

Notes:
1 For site-related contaminants (*i.e.* , PCBs and chlorinated solvents) only
GB = Green Brook (RM -1.58 to 0)
BB1 = Bound Brook (RM 0 to 3.43)
BB2 = Bound Brook (RM 3.43 to 4.09)
BB3 = Bound Brook (RM 4.09 to 5.22)
BB4 = Bound Brook (RM 5.22 to RM 6.18)
BB5 = Bound Brook (RM 6.18 to 6.82)
BB6 = Bound Brook (RM 6.82 to RM 8.31)
SL = Spring Lake

Table 7-3: Summary Ecological Risks for Floodplain Soil - Terrestrial Plants and Invertebrates[1]
Cornell-Dubilier Electronics Superfund Site: OU4 Bound Brook

Receptor		Line of Evidence	Exposure Unit							
			EU BG	**EU BB1**	**EU BB2**	**EU BB3**	**EU BB4**	**EU BB5**	**EU BB6**	**EU SL**
Terrestrial Plants and Invertebrates	Plants	Comparison of surface soil data to protective screening concentrations					Total PCBs	Total PCBs	Total PCBs	NA
	Soil Invertebrates	Comparison of surface soil data to protective screening concentrations					Total PCBs	Total PCBs	Total PCBs	NA
		PCB Bioaccumulation	N/A		N/A	N/A	Bioavailable	N/A	N/A	N/A

Notes:
1 For site-related contaminants (*i.e.* , PCBs and chlorinated solvents) only
NA = Not available; no floodplain soil was collected at EU SL
N/A = Not applicable

Exposure Unit (EU) Abbreviations:
GB = Green Brook (RM -1.58 to 0)
BB1 = Bound Brook (RM 0 to 3.43)
BB2 = Bound Brook (RM 3.43 to 4.09)
BB3 = Bound Brook (RM 4.09 to 5.22)
BB4 = Bound Brook (RM 5.22 to RM 6.18)
BB5 = Bound Brook (RM 6.18 to 6.82)
BB6 = Bound Brook (RM 6.82 to RM 8.31)
SL = Spring Lake

Table 7-4: Summary Ecological Risks for Floodplain Soil - Terrestrial Wildlife Receptors [1]
Cornell-Dubilier Electronics Superfund Site: OU4 Bound Brook

Receptor		Line of Evidence		Exposure Unit							
				EU BG	**EU BB1**	**EU BB2**	**EU BB3**	**EU BB4**	**EU BB5**	**EU BB6**	**EU SL**
Terrestrial Wildlife Receptors	Wildlife	Comparison of surface soil data to protective screening concentrations		Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	NA
	Herbivorous Birds	Comparison of modeled intakes to toxicity reference values	Mourning dove								NA
	Insectivorous Birds	Comparison of modeled intakes to toxicity reference values	American robin				Total PCBs	Total PCBs	Total PCBs	Total PCBs	NA
	Carnivorous Birds	Comparison of modeled intakes to toxicity reference values	Red-tailed hawk								NA
	Herbivorous Mammals	Comparison of modeled intakes to toxicity reference values	Eastern gray squirrel								NA
	Insectivorous Mammals	Comparison of modeled intakes to toxicity reference values	Short-tailed Shrew					Total PCBs	Total PCBs	Total PCBs	NA
	Carnivorous Mammals	Comparison of modeled intakes to toxicity reference values	Red fox								NA

Notes:
1 For site-related contaminants (*i.e.* , PCBs and chlorinated solvents) only
NA = Not available; no floodplain soil was collected at EU SL

Exposure Unit (EU) Abbreviations:
GB = Green Brook (RM -1.58 to 0)
BB1 = Bound Brook (RM 0 to 3.43)
BB2 = Bound Brook (RM 3.43 to 4.09)
BB3 = Bound Brook (RM 4.09 to 5.22)
BB4 = Bound Brook (RM 5.22 to RM 6.18)
BB5 = Bound Brook (RM 6.18 to 6.82)
BB6 = Bound Brook (RM 6.82 to RM 8.31)
SL = Spring Lake

Table 8-1
CHEMICAL-SPECIFIC ARARs
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Title	Citation	Level	Description	Media	ARAR or TBC	Comments
Safe Drinking Water Act	40 USC §300(f) 40 CFR 141	Federal	Drinking water standards, expressed as maximum contaminant levels (MCLs), which apply to specific contaminants that have been determined to have an adverse impact on human health.	Water	ARAR	Contaminant concentrations exceeding MCLs in drinking water may warrant corrective actions.
Federal Water Pollution Control Act (Clean Water Act [CWA])	CWA §304 40 CFR 131	Federal	Establishes criteria for setting water quality standards for surface water bodies based on the latest scientific data on impacts that a constituent concentrations has on a particular aquatic species and/or human health; criteria used as guidance by States in setting water quality standards	Water	ARAR	
NJ Surface Water Quality Standards	NJAC 7:9B	State	Establishes designated uses and antidegradation categories of the State's surface waters, classifies surface waters based on those uses (i.e., stream classifications), and specifies the water quality criteria and other policies and provisions necessary to attain those designated uses; specifies general, technical, and interstate policies, and policies pertaining to the establishment of water quality-based effluent limitations.	Water	ARAR	Contaminant concentrations exceeding criteria may warrant corrective action.
New Jersey Drinking Water Quality Act MCLs	NJAC 7:10	State	Rules that are promulgated to implement New Jersey's Safe Drinking Water Program. Standards are expressed as MCLs.	Water	ARAR	Contaminant concentrations exceeding MCLs in drinking water may warrant corrective actions.
New Jersey Groundwater Quality Criteria	NJAC 7:9C	State	The Ground Water Quality Standards (GWQS) establish the designated uses of the State's groundwater, classify groundwater based on those uses, and specify the water quality criteria to attain those designated uses. The groundwater quality criteria are numerical values assigned to each constituent (pollutant) discharged to groundwaters of the State. Groundwater is classified according to its hydrogeologic characteristics and designated uses.	Water	ARAR	Contaminant concentrations exceeding GWQS in groundwater may warrant corrective actions.
EPA Regional Screening Levels	EPA Regions 3,6, and 9	Federal	Provides concentrations for compounds and analytes based on their most recent risk assessment data. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm	Soil	TBC	May be used to screen contaminant concentrations to decide whether additional action is warranted.
New Jersey Soil Remediation Standards	NJAC 7:26D	State	Establishes minimum residential and non-residential direct contact soil remediation standards. Also used by NJ to determine if material is eligible for beneficial reuse within the State.	Soil	ARAR	Contaminant concentrations exceeding criteria may warrant corrective actions.

Table 8-2
LOCATION-SPECIFIC ARARs
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Title	Citation	Level	Description	Media	ARAR or TBC	Comments
Executive Order 11988 – Floodplain Management	40 CFR Part 6	Federal	Requires federal agencies to evaluate the potential effects of actions that may be taken in a floodplain and to avoid, to the extent possible, long-term and short-term adverse effects associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.	Soil	TBC	Pertinent to activities that may occur within the floodplain.
Executive Order 11990 – Protection of Wetland	40 CFR Part 6	Federal	Requires that activities conducted by federal agencies avoid, to the extent possible, long-term and short-term adverse effects associated with the modification or destruction of wetlands. Federal agencies are also required to avoid direct or indirect support of new construction in wetlands when there are practical alternatives; harm to wetlands must be minimized when there is no practical alternative available. These requirements are applicable to alternatives involving remedial actions (including construction) in wetlands.	Soil Sediment Water	TBC	Would be applicable to remediation activities impacting jurisdictional wetlands.
Statement of Procedures on Floodplain Management and Wetlands Protection	40 CFR Part 6, Appendix A	Federal	These procedures set forth USEPA policy and guidance for carrying out Executive Orders 11988 and 11990.	Soil Sediment Water	TBC	Executive Order implementation guidance.
EPA National Guidance, Water Quality Standards for Wetlands (WQSW)	Appendix B to Chapter 2 – General Program Guidance of the Water Quality Standards Handbook, December 1983 (updated July 1990)	Federal	Provides for the inclusion of wetlands in the definition of State waters. The WQSW guidance requires monitoring of wetlands for water quality management activities including the assessment and control of NPS pollution, and waste disposal activities (sewage sludge, CERCLA, RCRA).	Water	TBC	Would be applicable to remediation activities impacting wetlands.
Flood Hazard Area Regulations Flood Hazard Area Control Act	NJAC 7:13 NJSA 58:16A-50 et seq.	State State	Regulates the placement of fill, grading, excavation and other disturbances within the defined flood hazard area/floodplain of rivers/streams. Regulates activities (including remedial action) that will impact stream carrying capacity or flow velocity to avoid increasing impacts of flood waters.	Soil Sediment	ARAR	Applicable for Site activities occurring within the flood hazard area of floodplains of on-site rivers/streams.
Wetlands Act of 1970	NJSA 13:9A-1 et seq.		Applies to development or excavation in mapped tidal wetlands. Maps of the regulated wetlands are filed with Middlesex County.	Soil Sediment Water	ARAR	Potentially applicable for remediation activities occurring within the coastal wetlands.
Freshwater Wetlands Protection Act Rules	NJAC 7:7A NJSA 13:9B-1 et seq.	State	Regulates the disturbance or alteration of freshwater wetlands and their respective buffers.	Soil Sediment Water	ARAR	Applicable for Site activities disturbing freshwater wetlands and buffer areas. Would be applicable to remediation activities impacting wetlands.
Resource Conservation and Recovery Act (RCRA) Regulations – Location Standard	40 CFR 264.18	Federal	Regulates the design, construction, operation, and maintenance of hazardous waste management facilities within the 100-year floodplain.	Soil Sediment Water	ARAR	Applicable for on-site treatment, storage or disposal of hazardous waste.

Table 8-2
LOCATION-SPECIFIC ARARs
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Title	Citation	Level	Description	Media	ARAR or TBC	Comments
National Historic Preservation Act Protection of Historic Properties New Jersey Register of Historic Places Act	16 USC §470 et seq 16 CFR 470 36 CFR Part 800 (2004) NJSA 13:1B-15.128 et seq.	Federal Federal State	The NHPA requires consultation to identify historic properties potentially affected by federal activities and to assess the effects of and to seek ways to avoid, minimize, or mitigate any adverse impacts to those identified properties.	NA	ARAR	Would be applicable to the management of historic or archaeological artifacts identified on the Site.
Endangered Species Act Interagency Cooperation Endangered Species Act	16 USC §1531 et seq. 16 CFR 661 50 CFR Part 402 (1973)	Federal Federal	The Endangered Species Act provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the U.S. or elsewhere. Actions must be taken to conserve critical habitat in areas where there are endangered or threatened species.	Soil Sediment Water	ARAR	Requirements would be applicable if endangered or threatened species are identified on or adjacent to the site.
Fish and Wildlife Coordination Act	16 USC §662	Federal	Requires consideration of the effects of a proposed action on wetlands and areas affecting streams (including floodplains), as well as other protected habitats. Federal agencies must consult with the United States Fish and Wildlife Service (USFWS) and the appropriate state agency with jurisdiction over wildlife resources prior to issuing permits or undertaking actions involving the modification of any body of water (including impoundment, diversion, deepening, or otherwise controlled or modified for any purpose).	Soil Sediment Water	ARAR	The requirements of this act are applicable for alternatives involving remediation activities in wetlands, floodplains, and surface water bodies.

Table 8-3
ACTION-SPECIFIC ARARs
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Title	Citation	Level	Description	Media	ARAR or TBC	Comments
Federal Water Pollution Control Act (Clean Water Act [CWA])	33 USC §1251 et seq. 33 USC §404 40 CFR Part 230	Federal Federal Federal	Requires assurance that action taken meets applicable federal/state water quality limitations. Regulates the discharge of dredged or fill material into navigable waters of the United States, also regulates the construction of any structure in navigable waters. Guidelines for specification of disposal sites for dredged or fill material.	Soil Sediment Water	ARAR	Applicable for remediation activities resulting in discharge into navigable waters.
CWA Effluent Guidelines and Standards CWA National Pollutant Discharge Elimination System (NPDES)	40 CFR Part 401 40 CFR Parts 122-125	Federal Federal	Both on- and off-site discharges from CERCLA sites to surface waters are required to meet the substantive Clean Water Act limitations, monitoring requirements, and best management practices.	Water	ARAR	Applicable for discharges of water generated during remedial activities to surface water bodies.
Federal Pretreatment Regulations for Existing and New Sources of Pollution	40 CFR 403, and as adopted by NJ Utility Authorities	Federal	Provide pretreatment criteria that waste streams must meet prior to discharge to Publicly Owned Treatment Works (POTW).	Water	ARAR	Applicable for any remediation activities that may result in discharge to POTW.
New Jersey Water Pollution Control Act of 1977	NJSA 58:10A-1 et seq.	State	Discharge to surface waters of the state must meet requirements of New Jersey Pollutant Discharge Elimination System (NJPDES). Discharge to or via conveyances which will or may result in the introduction of pollutants into the groundwater of the state must meet requirements for discharge to groundwater.	Water	ARAR	Applicable for remediation activities involving discharge to surface water or the potential to impact groundwater. Permits not required for on-site work but remedial action must meet substantive requirements.
New Jersey Pollutant Discharge Elimination System (NJPDES) Rules	NJAC 7:14A	State	Regulate the direct and indirect discharge of pollutants to the surface water and groundwater.	Water	ARAR	Applicable for any remediation activities that may result in the discharge of water.
Treatment Works Approval	NJAC 7:14A-22	State	Design and construction standards for wastewater treatment systems.	Water	ARAR	Applicable for on-site treatment of water.
Resource Conservation and Recovery Act (RCRA) Identification and Listing of Hazardous Waste	40 CFR §239-299 42 USC 6921 et seq.	Federal Federal	Evaluate and control material that contains a listed waste, or that display a hazardous waste characteristic based on one of four criteria – reactivity, ignitability, flammability, and toxicity as measured through the Toxicity Characteristic Leaching Procedure (TCLP) test. Regulates storage, treatment, and disposal of listed or characteristic waste unless an exemption applies.	Soil Sediment Water	ARAR	Applicable for remediation activities involving listed or characteristic wastes.
RCRA Subtitle C Land Disposal Restrictions	40 CFR Section 6901 40 CFR Part 268	Federal Federal	Restricts land disposal of hazardous wastes that exceed specific criteria. Establishes Universal Treatment Standards to which hazardous waste must be treated prior to disposal.	Soil Sediment Water	ARAR	Potentially applicable if hazardous residuals are generated from remediation activities.
Toxic Substances Control Act of 1976 (TSCA) Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution, Processing, Distribution in Commerce, and Use Prohibitions	15 USC §2601 et seq. 40 CFR Part 761	Federal Federal	Regulates PCBs from manufacture to disposal.	Soil Sediment Water	ARAR	Potentially applicable to PCB-contaminated media at the Site depending on concentration of PCBs.

Table 8-3
ACTION-SPECIFIC ARARs
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Title	Citation	Level	Description	Media	ARAR or TBC	Comments
Hazardous Material Transportation Act (HMTA) Hazardous Waste Transportation	49 USC §1801-1819 49 CFR 107, 171, 172, and potentially 174, 176, or 177	Federal Federal	Regulates the transportation of hazardous materials and include the procedures for the packaging, labeling, manifesting, and transporting of hazardous materials.	Soil Sediment Water	ARAR	Applicable for remediation activities involving transportation of hazardous materials.
Hazardous Waste Management Regulations	NJAC 7:26G	State	Requirements for the generation, accumulation, on-site management, and transportation of hazardous waste.	Soil Sediment Water	ARAR	Applicable for on-site management of hazardous waste.
Solid Waste Management Act	NJSA 13:1E-1 et seq.	State	Establishes statutory framework for solid waste collection, disposal, and utilization activities. The statute designates each county as Solid Waste Management Districts and empowers the districts to develop and implement solid waste management plans.	Soil Sediment	TBC	Potentially applicable for solid waste generated during remedial activities.
Clean Air Act (CAA)	42 USC 7401 et seq.	Federal	Requires USEPA to set standards for pollutants considered harmful to public health and the environment. Establishes restrictions on emissions for area sources, carcinogenic pollutants, etc. (NESHAPS). Standards are established for six primary and secondary pollutants.	Air	ARAR	Applicable for any remediation activities that may result in emissions from equipment or facilities.
CAA New Source Review and Prevention of Significant Deterioration Requirements	40 CFR Part 52	Federal	New sources or modifications which emit greater than defined thresholds for listed pollutants must perform ambient impact analyses and install controls which meet best available control technology (BACT).	Air	ARAR	Potentially applicable for certain remediation technologies and would require a comparison of potential emissions to the emissions thresholds.
CAA New Source Performance Standards	40 CFR Part 60	Federal	Source-specific regulations which establish testing, control monitoring, and reporting requirements for new emissions sources.	Air	ARAR	NSPS could be relevant and appropriate if regulated new sources of air emissions were to be established on site.
National Emission Standards for Hazardous Air Pollutants (NESHAP) Standards of Hazardous Waste Combustors	40 CFR §61 and 63	Federal	NESHAP outlines air quality and monitoring requirements for operating equipment, and for facilities operating under RCRA Interim Status. Source-specific regulations which establish emissions standards for hazardous air pollutants.	Air	ARAR	Potentially applicable if emissions from remediation activities exceed thresholds for compliance.
Stormwater Management Rules	NJAC 7:8 (unless under Coastal Area Facility Review Act, NJSA 13:19-1 et seq.)	State	Establish the design and performance standards for stormwater management.	Water	ARAR	Applicable for the management of stormwater.
New Jersey Soil Erosion and Sediment Control Act	NJSA 4:24-39	State	Regulates construction that will potentially result in erosion of soils. Requires the implementation of soil erosion and sediment controls for activities disturbing over 5,000 square feet of land area.	Soil Sediment	ARAR	Applicable for site activities involving excavation, grading, or other soil disturbance activities.

Table 9
COMPARATIVE ANALYSIS OF ALTERNATIVE COSTS
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Alt.	Description	Capital Costs	Present Value of Capital Costs	Present Value of O&M	Present Value of Periodic Costs	Total Present Value
Sediment and Floodplain Soil RAA						
SS-1	No Action	$ -	$ -	$ -	$ -	$ -
SS-2	Excavation/Dredging of Sediments and Soils	$ 187,300,000	$ 177,600,000	$ -	$ 30,000	$ 177,600,000
SS-3	Excavation/Dredging of Sediment, Limited Excavation and Capping of Floodplain Soil, Limited Dredging and Capping in New Market Pond, and MNR of Depositional Areas	$ 165,700,000	$ 157,100,000	$ 638,000	$ 30,000	$ 157,800,000
Capacitor Debris RAA						
CD-1	No Action	$ -	$ -	$ -		$ -
CD-2	Surface Excavation, Capping, and Containment	$ 20,000,000	$ 20,000,000	$ 550,000	$ 50,000	$ 20,600,000
CD-3	Full Depth Excavation, Thermal Desorption, and On-Site Burial of Treated Materials	$ 42,400,000	$ 42,400,000	$ -	$ -	$ 42,400,000
CD-4	Full Depth Excavation and Off-Site Disposal	$ 32,800,000	$ 32,800,000	$ -	$ -	$ 32,800,000
Groundwater Discharge to Surface Water RAA						
GW-1	No Action	$ -	$ -	$ -	$ -	$ -
GW-2	Monitoring and Institutional Controls	$ 1,900,000	$ 1,900,000	$ 10,270,000	$ -	$ 12,200,000
GW-3	Hydraulic Control of Groundwater	$ 8,100,000	$ 8,100,000	$ 15,160,000	$ -	$ 23,300,000
GW-4	Permeable Reactive Barrier	$ 18,700,000	$ 18,700,000	$ 3,780,000	$ 4,580,000	$ 27,100,000
GW-5	Reactive Cap	$ 13,500,000	$ 13,500,000	$ 3,230,000	$ 5,370,000	$ 22,100,000
Water Line RAA						
WL-1	No Action	$ -	$ -	$ -	$ -	$ -
WL-2	Water Line Monitoring System, Replacement in Existing Easement as Necessary	$ 500,000	$ 500,000	$ 100,000	$ 3,500,000	$ 4,100,000
WL-3	Replace Pipeline in New ROW	$ 8,900,000	$ 8,900,000	$ -	$ -	$ 8,900,000

Notes:

1. Estimated costs based on an ENR CCI of 9664 (January 2014). All costs are in constant (non-inflationary) dollars. The Present Value was calculated based on discount rate of 7%..

2. A 30-year operating period was assumed for the groundwater control alternatives although it is anticipated that some of the systems will need to operate for decades, if not longer, to ensure compliance with ARARs. For Alternative GW-3, the treatment plant equipment would require replacement in year 30; for Alternative GW-4, the reactive media in the PRB would require replacement in year 15 and in year 30; and for Alternative GW-5, the reactive cap media would require replacement in year 15 and in year 30. Actual time frames may vary.

3. O&M costs associated with the water line are expected to be borne by NJAW as part of normal operating costs and are not included in this estimate. Under Alternative WL-2, leakage monitoring costs are included in the cost estimate. Initial costs would include installation of a leak detection system and SCADA warning system. Pipeline replacement was assumed to occur in year 10.

Table 10 – Cornell-Dubilier Electronics Superfund Site

Risk-based concentrations of PCBs in fish tissue and sediment protective of adult angler and child consumer (mg/kg)						
	Predatory Fish			Bottom-feeding Fish		
	10^{-6} cancer risk (adult/child)	10^{-4} cancer risk (adult/child)	Noncancer HQ=1 (child)	10^{-6} cancer risk (adult/child)	10^{-4} cancer risk (adult/child)	Noncancer HQ=1 (child)
Fish	0.0033	0.33	0.04	0.0033	0.33	0.04
Sediment	0.0038	0.38	0.08	0.0021	0.21	0.04

Table 11 – Cornell-Dubilier Electronics Superfund Site

Risk-based concentrations of PCBs in fish tissue protective of the adult angler who consumes 12 eight-ounce meals/year (mg/kg)						
	Predatory Fish			Bottom-feeding Fish		
	10^{-6} cancer risk	10^{-4} cancer risk	Noncancer HQ=1	10^{-6} cancer risk	10^{-4} cancer risk	Noncancer HQ=1
Fish	0.01	1	0.2	0.01	1	0.2

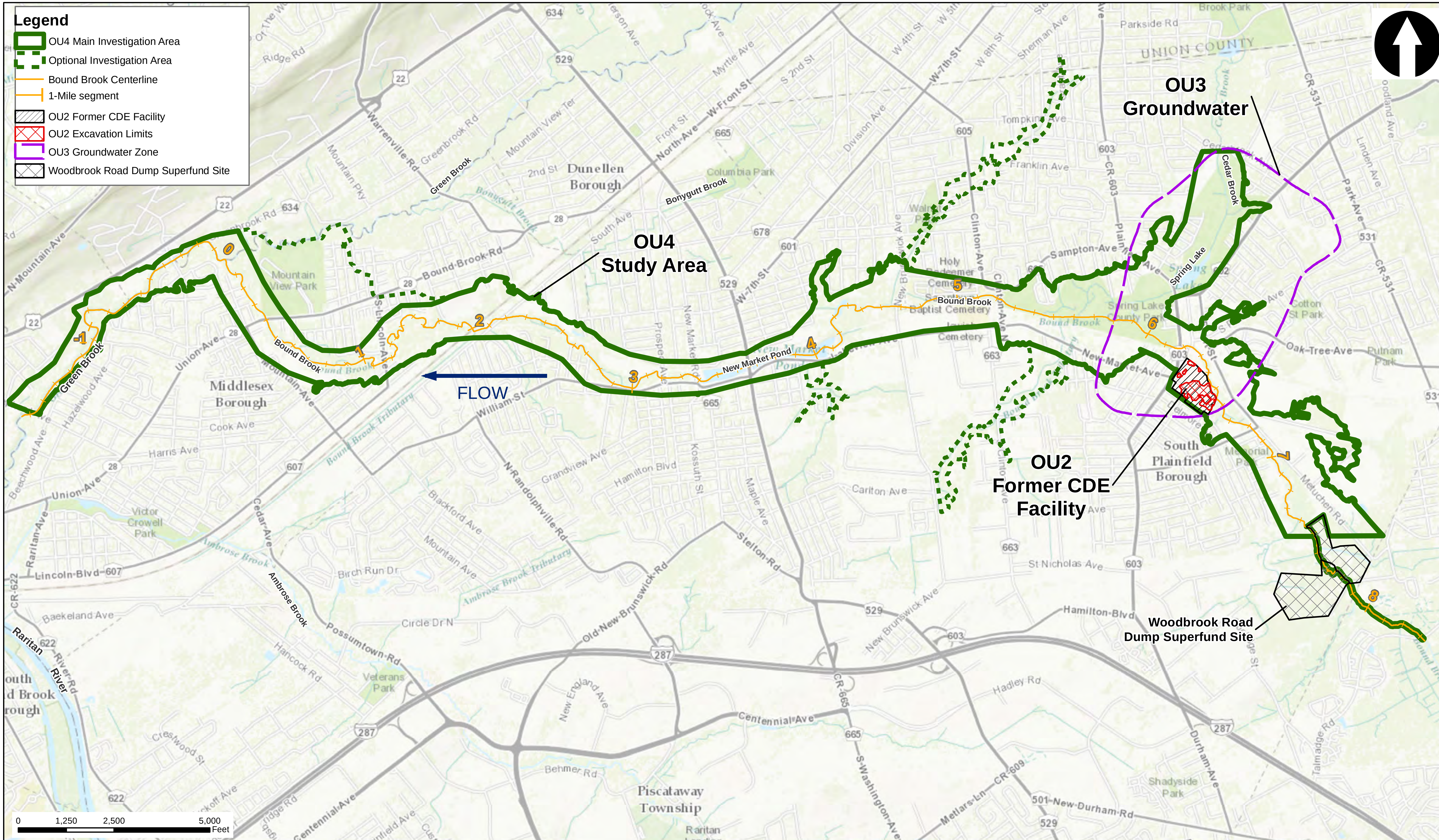
Table 12
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Entire Aquifer

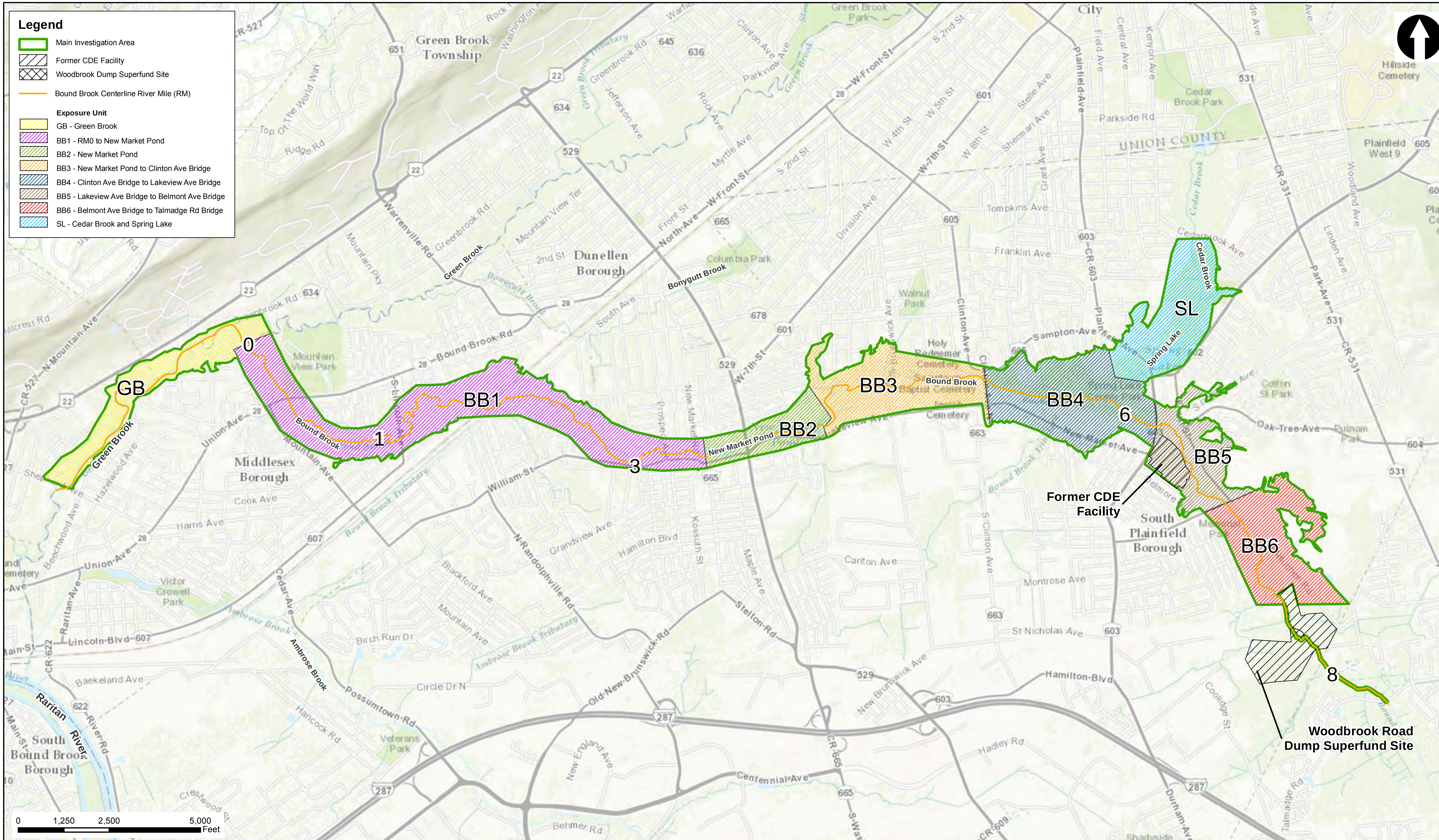
Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Sitewide (Within and Outside the Boundaries of the Former CDE Facility)	cis-1,2-Dichloroethene	0.25 J	390,000 J	µg/L	224 / 261	14,139	µg/L	97.5% KM (Chebyshev) UCL
	Tetrachloroethene	0.12 J	1,600	µg/L	112 / 261	36	µg/L	95% KM (Chebyshev) UCL
	1,2,4-Trichlorobenzene	0.1 J	1,600 J	µg/L	44 / 258	58	µg/L	97.5% KM (Chebyshev) UCL
	Trichloroethene	0.28 J	170,000	µg/L	237 / 261	7,041	µg/L	97.5% KM (Chebyshev) UCL
	Vinyl chloride	0.36 J	860 J	µg/L	64 / 261	53	µg/L	97.5% KM (Chebyshev) UCL
	Dibenzo(a,h)anthracene	0.07 J	5.5	µg/L	31 / 260	0.17	µg/L	95% KM (t) UCL
	Total PCB Aroclors	0.031	12,900	µg/L	75 / 244	4.4	µg/L	97.5% KM (Chebyshev) UCL
	Heptachlor	0.06	300	µg/L	16 / 262	3.6	µg/L	97.5% KM (Chebyshev) UCL
	2,3,7,8-TCDD Toxic Equivalence (TEQ) [1]	8.1E-10 J	2.2E-01	µg/L	42 / 45	2.6E-05	µg/L	99% Chebyshev (Mean, Sd) UCL
	Arsenic	0.68 J	829	µg/L	262 / 262	76	µg/L	95% Chebyshev (Mean, Sd) UCL

J - indicates an estimated value
[1] Represents the sum of dioxin/furan TEQ and PCB congeners TEQ. 95% UCL concentration was calculated using detected concentrations only.

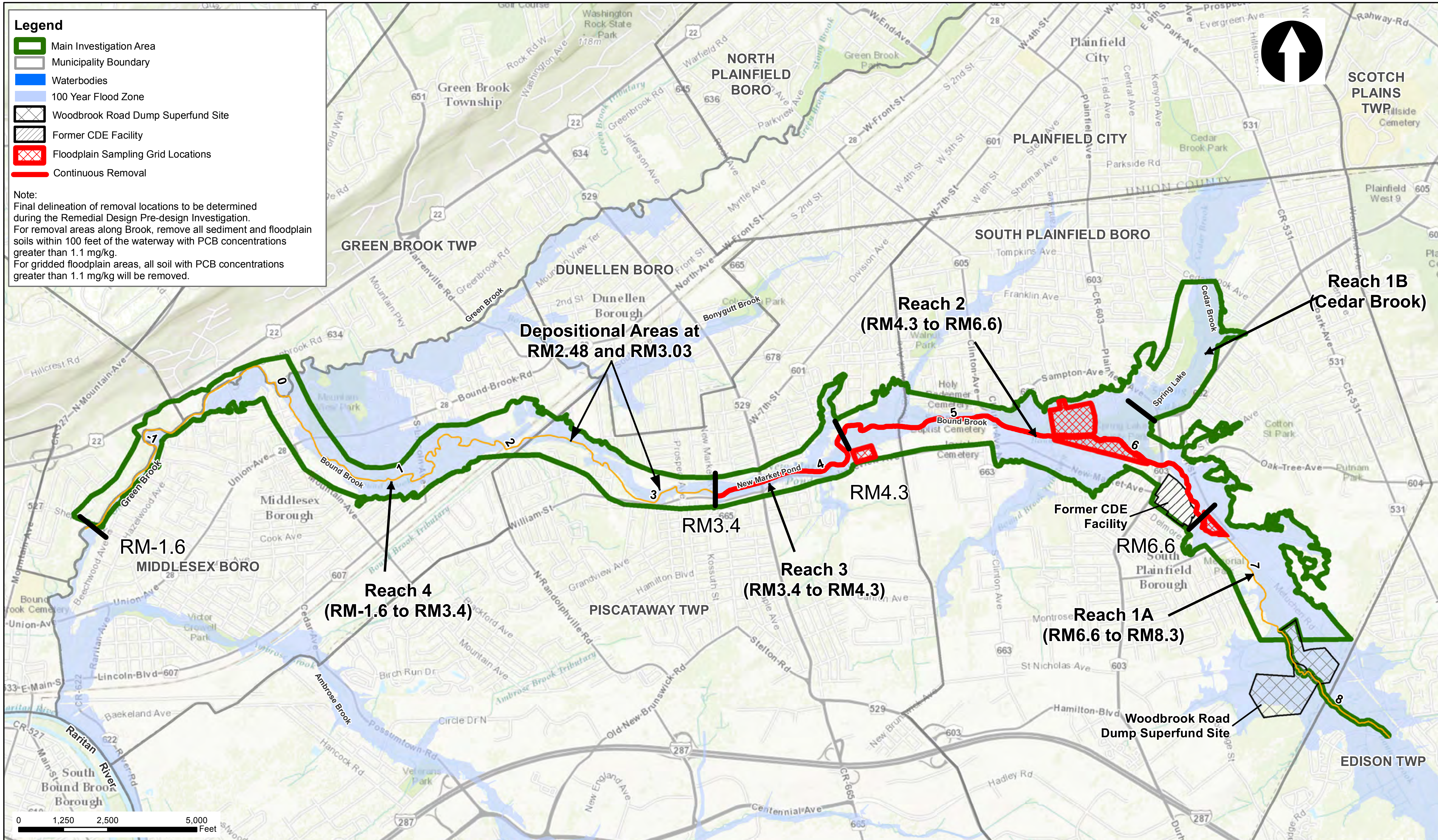
Data source: Cornell-Dubilier Electronics Site Operable Unit 3 Remedial Investigation.



	Cornell-Dubilier Electronics Superfund Site South Plainfield, New Jersey	**Operable Units (OU2, OU3, and OU4) of the Cornell-Dubilier Electronics Superfund Site** *Bound Brook OU4 RI/FS*	2014 Figure 1



	Cornell-Dubilier Electronics Superfund Site South Plainfield, New Jersey	**Exposure Units for the OU4 Risk Assessment** *Bound Brook OU4 RI/FS*	2014 Figure 2



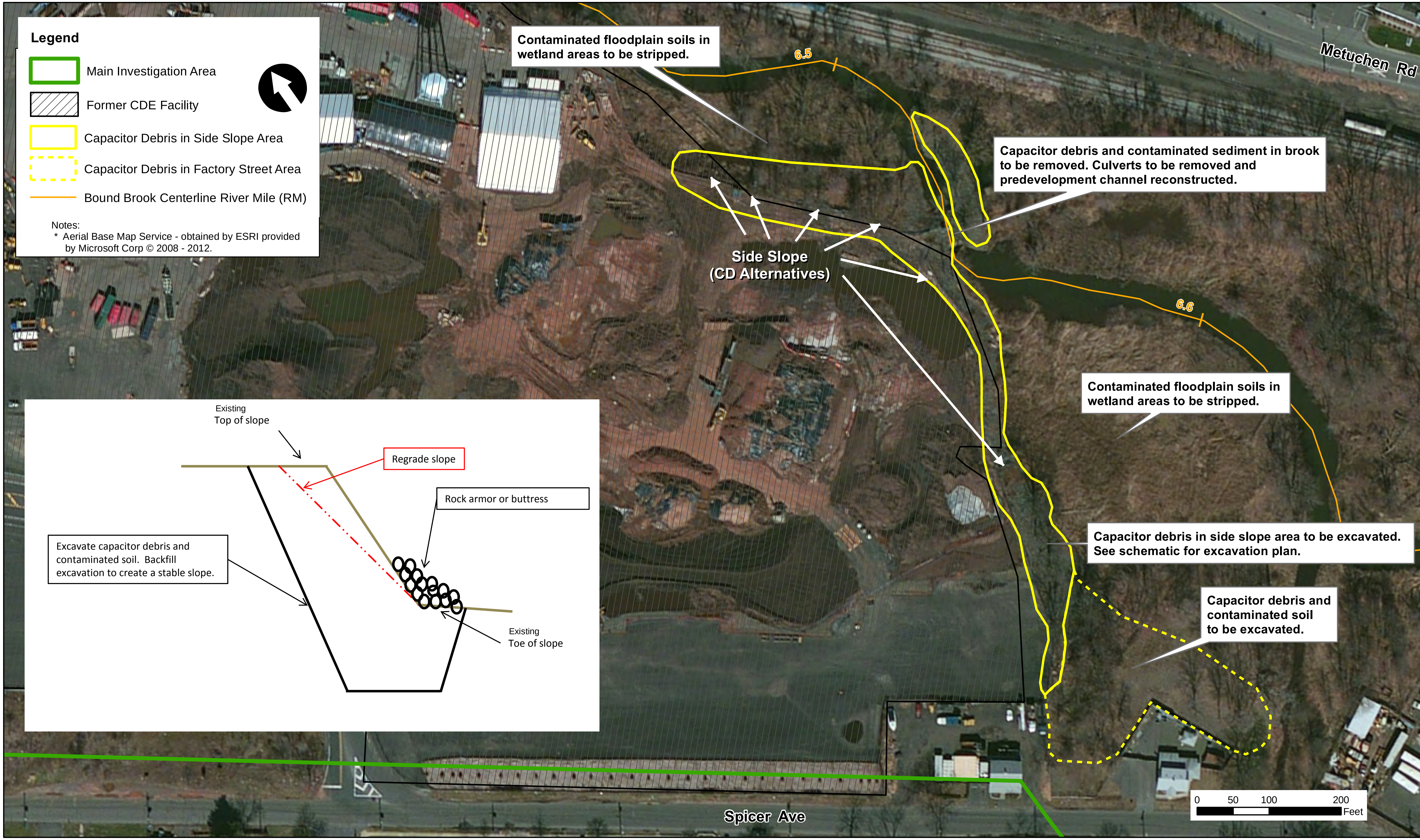
Cornell-Dubilier Electronics Superfund Site
South Plainfield, New Jersey

Sediment and Floodplain Soil (SS) Alternatives

Bound Brook OU4 RI/FS

2014

Figure 3



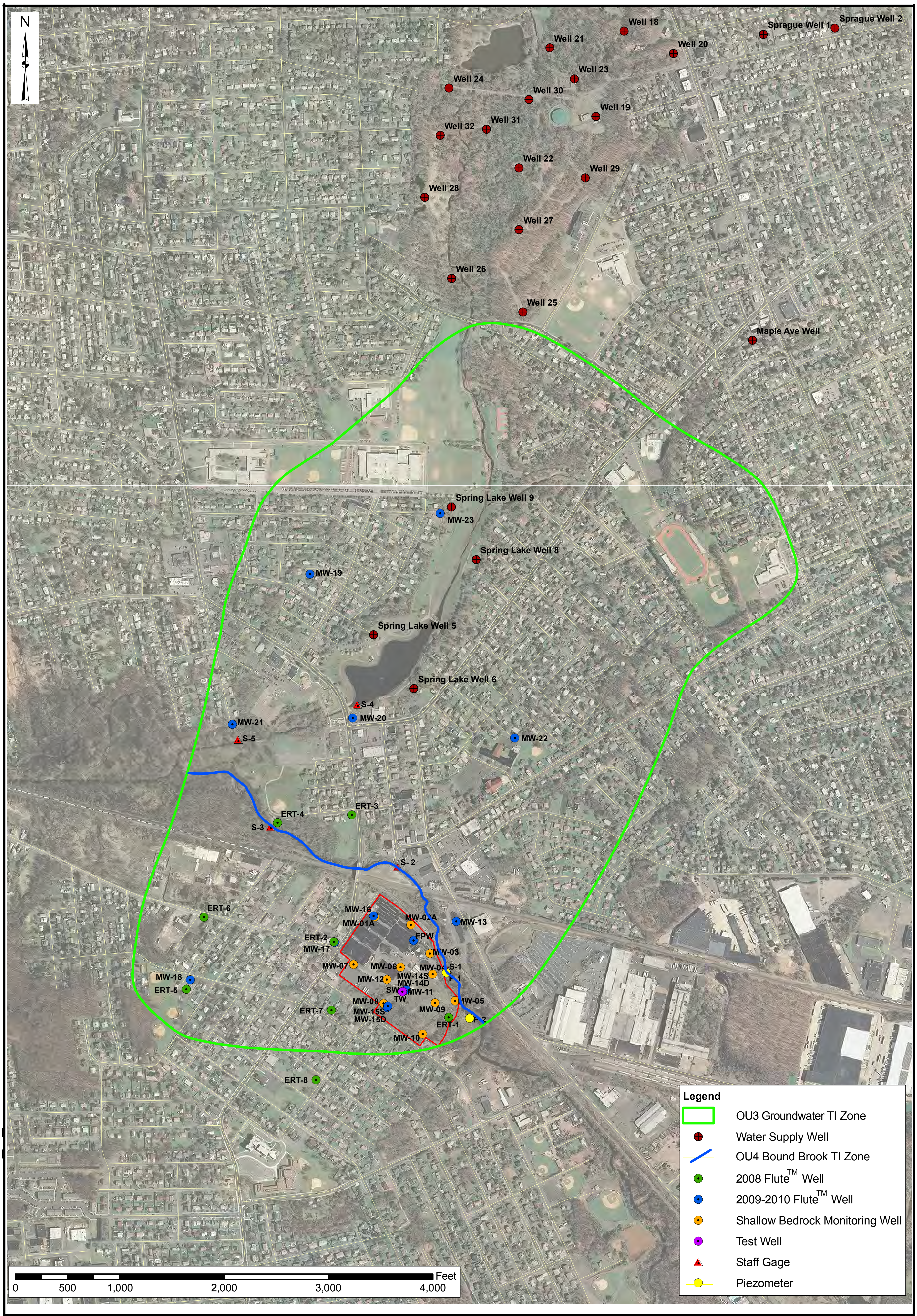
Cornell-Dubilier Electronics
Superfund Site
South Plainfield, New Jersey

Capacitor Debris (CD) Alternatives
Bound Brook OU4 RI/FS

2014

Figure 4

	Cornell-Dubilier Electronics Superfund Site **South Plainfield, New Jersey**	**Water Line** *Bound Brook OU4 RI/FS*	2014 Figure 5



ARCADIS MALCOLM PIRNIE

Cornell-Dubilier Electronics Superfund Site

South Plainfield, New Jersey

OU4 TI ZONE

Figure 6

G:\GISMOD\06739004.0000\RevOU3_TI_Zone.mxd

APPENDIX II
Administrative Record Index

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015 **REGION ID: 02**

Site Name: CORNELL DUBILIER ELECTRONICS, INC.
CERCLIS ID: NJD981557879
OUID: 04
SSID: 02GZ
Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
711284	02/12/2015	ADMINISTRATIVE RECORD INDEX FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	12	[AR INDEX]	[]	[]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]
180628	01/01/1111	AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY - EVALUATION OF JUNE 1999 SEDIMENT AND SOIL SAMPLING IN THE FLOODPLAIN OF BOUND BROOK - HEALTH CONSULTATION FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	15	[REPORT]	[]	[]	[]	[]
231453	05/16/1997	TRANSMITTAL OF THE DRAFT WORK PLAN FOR THE ECOLOGICAL RISK ASSESSMENT OF THE BOUND BROOK SENT TO THE EDISON WETLANDS ASSOCIATION FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[]	[]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]
201654	06/09/1997	CORRESPONDENCE REGARDING A REQUEST FOR A IMMEDIATE ASSISTANCE IN EXPEDITING THE PRELIMINARY ASSESSMENTS OF CONTAMINATION RECENTLY FOUND IN SOUTH PLAINFIELD, IN THE SEDIMENT OF THE BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[BROWNER, CAROL]	[EPA]	[FRANKS, BOB]	[NONE]
201653	06/25/1997	CORRESPONDENCE REGARDING A RESPONSE A LETTER OF JUNE 9,1997 REGARDING THE TIMETABLE FOR THE PRELIMINARY ASSESSMENT OF THE CONTAMINATION RECENTLY FOUND IN SEDIMENT OF BOUND BROOK IN THE VICINITY FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[LETTER]	[FRANKS, BOB]	[NONE]	[FOX, JEANNE M]	[EPA, REGION 2]
185022	08/01/1997	BOUND BROOK SAMPLING AND EDIBLE FISH TISSUE DATA REPORT FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	38	[REPORT]	[]	[]	[]	[]
201806	08/01/1997	US EPA REGION 2 SUPERFUND UPDATE: FISH ADVISORY FOR BOUND BROOK AND NEW MARKET POND FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	12	[FACTSHEET]	[]	[]	[]	[]
211011	08/01/1997	BOUND BROOK SAMPLING AND EDIBLE FISH TISSUE DATA REPORT AUGUST 1997 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	34	[REPORT]	[]	[]	[GROSSMAN, SCOTT , SPRENGER, MARK]	[EPA/ERT]
213857	08/01/1997	US EPA REGION 2 SUPERFUND UPDATE: FISH ADVISORY FOR BOUND BROOK AND NEW MARKET POND FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	4	[FACTSHEET]	[]	[]	[]	[]
201783	08/08/1997	NEWS ARTICLE REGARDING FISH CONSUMPTION ADVISORY ISSUED FOR NEW MARKET POND AND BOUND BROOK EPA FINDS ELEVATED PCB LEVELS FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	3	[ARTICLE]	[]	[]	[]	[]

711284

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015 **REGION ID: 02**

Site Name: CORNELL DUBILIER ELECTRONICS, INC.
CERCLIS ID: NJD981557879
OUID: 04
SSID: 02GZ
Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
201405	08/09/1997	NEWSPAPER ARTICLE - COURIER-NEWS: THE BOUND BROOK'S FISH TAINTED, FEDS SAY - THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[ARTICLE]	[]	[]	[]	[]
157957	08/22/1997	SAMPLING QA/QC WORK PLAN - INITIAL SAMPLING OF THE BOUND BROOK DOWNSTREAM - EPA CONTRACT NO.: 68-W5-0019 - TDD NO.: 02-97-02-0015 - DCN NO.: START-02-F-01263 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	37	[PLAN]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
157955	08/28/1997	SAMPLING QA/QC WORK PLAN - INITIAL SAMPLING OF THE BOUND BROOK DOWNSTREAM - EPA CONTRACT NO.: 68-W5-0019 - TDD NO.: 02-97-02-0015 - DCN NO.: START-02-F-01263 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	36	[PLAN]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
157956	08/28/1997	SAMPLING QA/QC WORK PLAN - INITIAL SAMPLING OF THE BOUND BROOK DOWNSTREAM - EPA CONTRACT NO.: 68-W5-0019 - TDD NO.: 02-97-02-0015 - DCN NO.: START-02-F-01263 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	39	[PLAN]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
231856	10/01/1997	MAP: FIGURE 1 - SITE MAP - BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[MAP]	[]	[]	[]	[]
157960	11/17/1997	BOUND BROOK SOIL SAMPLING TRIP REPORT - TDD NO.: 02-97-09-0015 - DCN NO.: START-02-F-01473 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	56	[REPORT]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
157959	12/18/1997	BOUND BROOK SOIL SAMPLING TRIP REPORT - TDD NO.: 02-97-09-0015 - DCN NO.: START-02-F-01520 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	44	[REPORT]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
231405	01/22/1998	CORRESPONDENCE REGARDING THE TABLES THAT SUMMARIZE THE RESULTS OF SEDIMENT AND FISH TISSUE SAMPLES COLLECTED FROM THE BOUND BROOK AND DOWNSTREAM WATER BODIES FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	4	[LETTER]	[RUPEL, BRUCE]	[NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]
202056	06/25/1998	CORRESPONDENCE REGARDING TABLES WHICH SUMMARIZE THE RESULTS OF ANALYSIS OF EDIBLE FISH SAMPLES COLLECTED FROM BOUND BROOK AND NEW MARKET FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[SPILATORE, RICHARD]	[MIDDLESEX COUNTY HEALTH DEPT]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]
201417	08/10/1998	US EPA PRESS RELEASE: FISH CONSUMPTION ADVISORY ISSUED FOR SPRING LAKE/BOUND BROOK/NEW MARKET POND - THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	3	[ARTICLE]	[]	[]	[]	[]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

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Site Name: CORNELL DUBILIER ELECTRONICS, INC.
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DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
112977	09/07/1998	SOIL AND SEDIMENT SAMPLING AND ANALYSIS SUMMARY REPORT - CORNELL DUBILIER ELECTRONICS - BOUND BROOK, VOLUME 1 OF 2	708	[REPORT]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
112978	09/07/1998	SOIL AND SEDIMENT SAMPLING AND ANALYSIS SUMMARY REPORT - CORNELL DUBILIER ELECTRONICS - BOUND BROOK, VOLUME 2 of 2	936	[REPORT]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
185023	09/07/1998	SOIL AND SEDIMENT SAMPLING AND ANALYSIS SUMMARY REPORT BOUND BROOK - EPA CONTRACT NO.: 68-W5-0019 - TDD NO.: 02-97-09-0015 - DCN NO.: START-02-F-01559 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1962	[REPORT]	[HARKAY, DAN]	[EPA]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
202063	02/19/1999	CORRESPONDENCE REGARDING A DRAFT REPORT DOCUMENTING THE RESULTS OF THE EPA INVESTIGATION OF THE BOUND BROOK DOWNSTREAM OF THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[VAN VELDHUISEN, DONNA J]	[NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]
210782	05/21/1999	CORRESPONDENCE REGARDING EPA COLLECTED SOIL AND SEDIMENT SAMPLES FROM THE BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[E MAIL MESSAGE]	[MIGNONE, TOM]	[ROY F. WESTON, INC.]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]
151483	08/01/1999	FINAL REPORT: ECOLOGICAL EVALUATION VOLUME I FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	201	[REPORT]	[]	[]	[BECKMAN, NANCY , GROSSMAN, SCOTT , SPRENGER, MARK]	[EPA/ERT]
178384	08/01/1999	FINAL REPORT: ECOLOGICAL EVALUATION VOLUME II APPENDIX A - H FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	846	[REPORT]	[]	[]	[BECKMAN, NANCY , GROSSMAN, SCOTT , SPRENGER, MARK]	[EPA/ERT]
202156	08/28/1999	REMOVAL ACTION PLAN - DRUM AND WASTE STABILIZATION OF DRUM CLUSTER - UNNAMED TRIBUTARY OF THE BOUND BROOK AND REAR EMBANKMENT FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[PLAN]	[]	[]	[]	[]
125644	10/14/1999	ATSDR HEALTH CONSULTATION - EVALUATION OF BOUND BROOK AREA SEDIMENTS AND SURFACE SOILS FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	13	[REPORT]	[]	[]	[,]	[ATSDR]
180630	10/14/1999	HEALTH CONSULTATION - EVALUATION OF BOUND BROOK AREA SEDIMENTS AND SURFACE SOILS FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	14	[REPORT]	[]	[]	[]	[]
180632	10/14/1999	HEALTH CONSULTATION - EVALUATION OF BOUND BROOK AREA SEDIMENTS AND SURFACE SOILS FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	14	[REPORT]	[]	[]	[]	[]
180631	11/03/1999	CORRESPONDENCE REGARDING THE PUBLIC HEALTH CONSULTATION (EVALUATION OF BOUND BROOK AREA SEDIMENTS AND SURFACE SOILS) FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[MANNINO, PIETRO]	[EPA, REGION 2]	[BLOCK, ARTHUR]	[EPA]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015 **REGION ID: 02**

Site Name: CORNELL DUBILIER ELECTRONICS, INC.

CERCLIS ID: NJD981557879

OUID: 04

SSID: 02GZ

Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
108594	01/17/2000	Letter to Mr. Eric Wilson, On-Scene Coordinator, U.S. EPA, Region II, from Mr. Michael Mahnkopf, Project Manager, Roy F. Weston, Inc., re: Floodplain Soil/Sediment Sampling and Analysis Summary Report, Cornell Dubilier Electronics, January ...	645	[REPORT]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
180636	05/25/2000	HEALTH CONSULTATION - EVALUATION OF JUNE 1999 SEDIMENT AND SOIL SAMPLING IN THE FLOODPLAIN OF BOUND BROOK FOR THE VETERAN'S MEMORIAL PARK SITE	16	[REPORT]	[]	[]	[]	[]
109090	08/01/2000	Report: Final Community Relations Plan for Remedial Investigation/Feasibility Study, Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, prepared by Foster Wheeler Environmental Corporation, prepared for ...	51	[PLAN]	[,]	[EPA, REGION 2]	[,]	[FOSTER WHEELER ENVIRONMENTAL CORP]
202204	08/24/2000	CORRESPONDENCE REGARDING THE RESPONSE TO DRUM CLUSTER DISCOVERY ON BANK OF BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[LETTER]	[MAGRIPLES, NICK]	[EPA]	[FRANCISCO, TIMOTHY]	[OXFORD ENVIRONMENTAL, INC.]
231533	08/24/2000	CORRESPONDENCE REGARDING THE FINDING OF NEW DRUMS ALONG THE BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[E MAIL MESSAGE]	[SUNDRAM, MUTHU]	[EPA, REGION 2]	[MAGRIPLES , NICHOLAS]	[EPA, REGION 2]
235098	03/15/2001	DATA EVALUATION REPORT, VOLUME I OF II - EPA WORK ASSIGNMENT NUMBER: 018-RICO-02GZ - EPA CONTRACT NO.: 68-W-98-214 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	790	[REPORT]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[,]	[FOSTER WHEELER ENVIRONMENTAL CORP]
235099	03/15/2001	DATA EVALUATION REPORT, VOLUME II OF II - EPA WORK ASSIGNMENT NUMBER: 018-RICO-02GZ - EPA CONTRACT NO.: 68-W-98-214 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	428	[REPORT]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[,]	[FOSTER WHEELER ENVIRONMENTAL CORP]
108597	08/01/2001	Report: Final Remedial Investigation Report for Operable Unit 1 (OU-1), Off-Site Soils, for Cornell -Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, prepared by Foster Wheeler Environmental Corporation, ...	1113	[REPORT]	[,]	[EPA, REGION 2]	[,]	[FOSTER WHEELER ENVIRONMENTAL CORP]
213579	11/07/2001	THE DATA VALIDATION ASSESSMENT FOR THE VETERAN'S MEMORIAL PARK SITE	102	[REPORT]	[CHONG, MARGARET]	[EPA]	[SUMBALY, SMITA]	[WESTON SOLUTIONS]
213578	11/08/2001	TRANSMITTAL OF THE DATA VALIDATION ASSESSMENT FOR THE VETERAN'S MEMORIAL PARK SITE	1	[OTHER]	[CHONG, MARGARET]	[EPA]	[SUMBALY, SMITA]	[WESTON SOLUTIONS]
140022	01/01/2002	REMOVAL SITE ASSESSMENT REPORT FOR WOODBROOK ROAD DUMP SITE	286	[REPORT]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY REGION 2]	[,]	[ROY F. WESTON, INC.]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015

REGION ID: 02

Site Name: CORNELL DUBILIER ELECTRONICS, INC.
CERCLIS ID: NJD981557879
OUID: 04
SSID: 02GZ
Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
213580	04/12/2002	TRANSMITTAL OF THE LIMITED SITE INVESTIGATION REPORT, BLOCK 260, LOT 15.02, PMK GROUP NO. 0502014 FOR THE VETERAN'S MEMORIAL PARK SITE	1	[OTHER]	[BUTTIGLIERI, VINCENT]	[BOROUGH OF SOUTH PLAINFIELD]	[VILLANOVA, JEFFREY]	[PMK GROUP]
213581	04/12/2002	LIMITED SITE INVESTIGATION REPORT, BLOCK 260, LOT 15.02, PMK GROUP NO. 0502014 FOR THE VETERAN'S MEMORIAL PARK SITE	106	[REPORT]	[BUTTIGLIERI, VINCENT]	[BOROUGH OF SOUTH PLAINFIELD]	[VILLANOVA, JEFFREY]	[PMK GROUP]
213582	04/15/2002	TRANSMITTAL OF THE PRELIMINARY ASSESSMENT REPORT, BLOCK 260, LOT 15.02, PMK GROUP NO. 0502014 FOR THE VETERAN'S MEMORIAL PARK SITE	1	[OTHER]	[BUTTIGLIERI, VINCENT]	[BOROUGH OF SOUTH PLAINFIELD]	[MINEO, THOMAS]	[PMK GROUP]
213583	04/15/2002	PRELIMINARY ASSESSMENT REPORT, BLOCK 260, LOT 15.02, PMK GROUP NO. 0502014 FOR THE VETERAN'S MEMORIAL PARK SITE	137	[REPORT]	[BUTTIGLIERI, VINCENT]	[BOROUGH OF SOUTH PLAINFIELD]	[MINEO, THOMAS]	[PMK GROUP]
213584	07/23/2002	TRANSMITTAL OF ASBESTOS ANALYSIS OF BULK MATERIALS FOR THE VETERAN'S MEMORIAL PARK SITE	4	[OTHER]	[RANGE, LINDA]	[NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION]	[PATEL, DEVANG]	[PMK GROUP]
213592	08/06/2002	MAP OF VETERAN'S MEMORIAL PARK AND SURROUNDING AREA FOR THE VETERAN'S MEMORIAL PARK SITE	1	[MAP]	[]	[]	[,]	[PMK GROUP]
213593	09/27/2002	REVISED DRAFT TABLES FROM THE SITE INVESTIGATION REPORT FOR THE VETERAN'S MEMORIAL PARK SITE	14	[REPORT]	[]	[]	[PATEL, DEVANG]	[PMK GROUP]
213585	10/18/2002	SITE INVESTIGATION REPORT / INTERIM REMEDIAL ACTION WORKPLAN, VOLUME III LABORATORY ANALYTICAL DATA PACKAGE, BLOCK 260, LOT 15.02, PMK GROUP NO. 0502014 FOR THE VETERAN'S MEMORIAL PARK SITE	132	[REPORT]	[,]	[BOROUGH OF SOUTH PLAINFIELD]	[VILLANOVA, JEFFREY]	[PMK GROUP]
213586	10/18/2002	SITE INVESTIGATION REPORT / INTERIM REMEDIAL ACTION WORKPLAN, BLOCK 260, LOT 15.02, PMK GROUP NO. 0502014 FOR THE VETERAN'S MEMORIAL PARK SITE	205	[REPORT]	[,]	[BOROUGH OF SOUTH PLAINFIELD]	[,]	[PMK GROUP]
213587	12/10/2003	SOIL MANIFESTS FOR NOVEMBER - DECEMBER 2003 FROM CLEAN EARTH FOR THE VETERAN'S MEMORIAL PARK SITE	58	[INVOICE]	[]	[]	[,]	[CLEAN EARTH OF PHILADELPHIA INC.]
213588	02/12/2004	TRANSMITTAL OF THE INTERIM REMEDIAL ACTION REPORT FOR THE VETERAN'S MEMORIAL PARK SITE	1	[FORM]	[RANGE, LINDA]	[NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION]	[,]	[PMK GROUP]
213589	02/12/2004	SUBMITTAL OF THE INTERIM REMEDIAL ACTION REPORT, BLOCK 260, LOT 15.02 FOR THE VETERAN'S MEMORIAL PARK SITE	1	[LETTER]	[RANGE, LINDA]	[NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION]	[PATEL, DEVANG]	[PMK GROUP]
213590	02/12/2004	INTERIM REMEDIAL ACTION REPORT, BLOCK 260, LOT 15.02 FOR THE VETERAN'S MEMORIAL PARK SITE	66	[REPORT]	[,]	[BOROUGH OF SOUTH PLAINFIELD]	[,]	[PMK GROUP]
213591	02/12/2004	ATTACHMENT 3, POST-EXCAVATION SOIL ANALYTICAL RESULTS REPORT OF THE INTERIM REMEDIAL ACTION REPORT, BLOCK 260, LOT 15.02 FOR THE VETERAN'S MEMORIAL PARK SITE	48	[REPORT]	[,]	[BOROUGH OF SOUTH PLAINFIELD]	[,]	[PMK GROUP]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015

REGION ID: 02

Site Name: CORNELL DUBILIER ELECTRONICS, INC.

CERCLIS ID: NJD981557879

OUID: 04

SSID: 02GZ

Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
181556	05/11/2006	PRELIMINARY CONCEPTUAL SITE MODEL FOR OPERABLE UNIT 4 - EPA WORK ASSIGNMENT NUMBER: 157-RICO-02GZ - EPA CONTRACT NO.: 68-W-98-214 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	112	[REPORT]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[,]	[TETRA TECH EC, INC.]
235096	05/11/2006	TRANSMITTAL OF THE PRELIMINARY CONCEPTUAL SITE MODEL FOR OPERABLE UNIT 4 - EPA WORK ASSIGNMENT NUMBER: 157-RICO-02GZ - EPA CONTRACT NO.: 68-W-98-214 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[BACHMANN JR., JOHN]	[EPA, REGION 2]	[COLVIN, WILLIAM R]	[TETRA TECH, INC.]
114220	11/01/2007	DRAFT SITE CHARACTERIZATION SUMMARY REPORT - VOLUMES I-II, WOODBROOK ROAD DUMP SITE	1255	[REPORT]	[]	[]	[,]	[TRC ENVIRONMENTAL CORP]
283129	02/07/2008	SAMPLING REPORT FOR THE DATES OF 12/10/2007 THROUGH 12/27/2007 AND 01/07/2008 THROUGH 01/09/2008 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	221	[REPORT]	[]	[]	[BRENNAN, JOHN F, RICHARDS, SANDRA]	[ROY F. WESTON, INC., WESTON SOLUTIONS, INC.]
181524	07/16/2008	INTERNET ARTICLE MY CENTRAL JERSEY.COM - CHEMICALS INCREASE IN THE BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[ARTICLE]	[]	[]	[]	[]
181525	07/16/2008	INTERNET ARTICLE: THE STAR LEDGER - ACTIVISTS URGE CLEANUP OF TAINTED BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[ARTICLE]	[]	[]	[]	[]
124196	10/28/2008	FINAL SITE-WIDE SITE SAFETY AND HEALTH PLAN FOR ALL OPERABLE UNITS (OU1 THROUGH OU-4) FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	300	[PLAN]	[]	[]	[,]	[MALCOLM PIRNIE, INC.]
283112	12/01/2008	WILDLIFE SPECIES INVESTIGATION OF THE BOUND BROOK ECOSYSTEM FINAL REPORT FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	20	[REPORT]	[,]	[LOCKHEED MARTIN/REAC]	[]	[]
200336	06/01/2009	TECHNICAL MEMORANDUM OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	101	[MEMORANDUM]	[]	[]	[,]	[MALCOLM PIRNIE, INC.]
711368	12/01/2009	ADDENDUM TO THE DRAFT SITE CHARACTERIZATION SUMMARY REPORT FOR THE WOODBROOK ROAD DUMP SITE	65	[REPORT]	[MANNINO, PIETRO]	[EPA, REGION 2]	[NACHMAN, DANIEL A]	[TRC COMPANIES, INC.]
178373	04/01/2010	FINAL REASSESSMENT REPORT FOR OU 4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	187	[REPORT]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[SPRENGER, MARK]	[EPA/ERT]
178374	04/01/2010	FINAL REASSESSMENT REPORT FOR OU 4 APPENDICES FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1355	[REPORT]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[SPRENGER, MARK]	[EPA/ERT]
152741	07/01/2010	FINAL CULTURAL RESOURCES WORK PLAN OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	12	[PLAN]	[]	[]	[,]	[MALCOLM PIRNIE, INC., THE LOUIS BERGER GROUP, INC.]
152742	07/01/2010	FINAL FIELD SAMPLING PLAN OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	83	[PLAN]	[]	[]	[,]	[MALCOLM PIRNIE, INC., THE LOUIS BERGER GROUP, INC.]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015 **REGION ID: 02**

Site Name: CORNELL DUBILIER ELECTRONICS, INC.
CERCLIS ID: NJD981557879
OUID: 04
SSID: 02GZ
Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
152743	07/01/2010	FINAL QUALITY ASSURANCE PROJECT PLAN OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	569	[PLAN]	[]	[]	[,]	[MALCOLM PIRNIE, INC., THE LOUIS BERGER GROUP, INC.]
152744	07/01/2010	FINAL REMEDIAL INVESTIGATION / FEASIBILITY STUDY WORK PLAN OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	230	[PLAN]	[]	[]	[,]	[MALCOLM PIRNIE, INC., THE LOUIS BERGER GROUP, INC.]
152740	02/16/2011	CORRESPONDENCE REGARDING OU4 BOUND BROOK 2010 LAND SURVEY AND SEDIMENT PROBING FIELD ACTIVITIES FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	250	[LETTER]	[AUSTIN, MARK , MAAS, KEN]	[EPA, US ARMY CORPS OF ENGINEERS - KANSAS CITY DISTRICT]	[WARNER, LEONARD]	[THE LOUIS BERGER GROUP, INC.]
152831	04/07/2011	QUALITY ASSURANCE PROJECT PLAN FIELD MODIFICATION NO. 1 OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	88	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[ACCARDI-DEY, AMYMARIE , MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
275820	07/15/2011	PRELIMINARY FINDINGS AND RECOMMENDATIONS OF UNVALIDATED ANALYTICAL RESULTS FROM HIGH RESOLUTION CORE AND SURFACE SEDIMENT DATA FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	21	[LETTER]	[AUSTIN, MARK , MAAS, KEN]	[EPA, US ARMY CORPS OF ENGINEERS - KANSAS CITY DISTRICT]	[WARNER, LEONARD]	[THE LOUIS BERGER GROUP, INC.]
152832	09/08/2011	QUALITY ASSURANCE PROJECT PLAN FIELD MODIFICATION NO. 2 OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	15	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
152833	10/14/2011	QUALITY ASSURANCE PROJECT PLAN FIELD MODIFICATION NO. 3 OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	8	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[ACCARDI-DEY, AMYMARIE , MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
152834	10/17/2011	QUALITY ASSURANCE PROJECT PLAN FIELD MODIFICATION NO. 4 EXPANDED OU4 INVESTIGATION AREA FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	11	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[ACCARDI-DEY, AMYMARIE , MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
152837	04/05/2012	QUALITY ASSURANCE PROJECT PLAN FIELD MODIFICATION NO. 7 MODELING DATA NEEDS OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	7	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[ACCARDI-DEY, AMYMARIE , MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
152830	04/27/2012	CORRESPONDENCE REGARDING PRELIMINARY EVALUATION OF PCB CONGENER AND PCB AROCLOR DATA FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	3	[LETTER]	[AUSTIN, MARK , MAAS, KEN , MOLLOY, FRED]	[EPA, US ARMY CORPS OF ENGINEERS, US ARMY CORPS OF ENGINEERS - KANSAS CITY DISTRICT]	[ACCARDI-DEY, AMYMARIE , WARNER, LEONARD]	[THE LOUIS BERGER GROUP, INC.]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015 **REGION ID: 02**

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CERCLIS ID: NJD981557879
OUID: 04
SSID: 02GZ
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DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
152838	06/05/2012	QUALITY ASSURANCE PROJECT PLAN FIELD MODIFICATION NO. 8 DEEP SOIL BORINGS IN AREAS OF KNOWN DEBRIS OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	3	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[ACCARDI-DEY, AMYMARIE , MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
152835	06/21/2012	QUALITY ASSURANCE PROJECT PLAN DRAFT FIELD MODIFICATION NO. 5 REFERENCE SITE PROGRAM OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	87	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[ACCARDI-DEY, AMYMARIE , MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
152836	06/27/2012	QUALITY ASSURANCE PROJECT PLAN FIELD MODIFICATION NO. 6 POREWATER PROGRAM OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	66	[PLAN]	[,]	[US ARMY CORPS OF ENGINEERS, US ENVIRONMENTAL PROTECTION AGENCY]	[ACCARDI-DEY, AMYMARIE , MCCANN, JAMES , WARNER, LEONARD]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
152839	06/27/2012	CORRESPONDENCE REGARDING POTENTIAL POREWATER SAMPLING LOCATIONS OU4 BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	88	[LETTER]	[LYONS, JAMES , MAAS, KEN , MOLLOY, FRED]	[US ARMY CORPS OF ENGINEERS, US ARMY CORPS OF ENGINEERS - KANSAS CITY DISTRICT]	[ACCARDI-DEY, AMYMARIE]	[THE LOUIS BERGER GROUP, INC.]
124193	06/29/2012	FINAL FEASIBILITY STUDY REPORT FOR OU3 - GROUNDWATER FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	363	[REPORT]	[]	[]	[,]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
124194	06/29/2012	FINAL TECHNICAL IMPRACTICABILITY EVALUATION FOR OU3 - GROUNDWATER FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	110	[REPORT]	[]	[]	[,]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
124198	06/29/2012	FINAL REMEDIAL INVESTIGATION REPORT FOR OU3 - GROUNDWATER FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	697	[REPORT]	[]	[]	[,]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
124201	06/29/2012	APPENDIX A: US EPA SUPERFUND SUPPORT TEAM SAMPLING REPORT TO THE FINAL REMEDIAL INVESTIGATION REPORT FOR OU3 - GROUNDWATER FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	13732	[REPORT]	[]	[]	[,]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
124202	06/29/2012	APPENDIX B THROUGH APPENDIX F TO THE FINAL REMEDIAL INVESTIGATION REPORT FOR OU3 - GROUNDWATER FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	824	[REPORT]	[]	[]	[,]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
124203	06/29/2012	APPENDIX G THROUGH APPENDIX U TO THE FINAL REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT FOR OU3 - GROUNDWATER FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	5362	[REPORT]	[]	[]	[,]	[ARCADIS/MALCOLM PIRNIE, THE LOUIS BERGER GROUP, INC.]
283113	09/13/2012	PISCATAWAY PARKS AND RECREATION DEPARTMENT INTERVIEW REGARDING THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[NOTES]	[]	[]	[]	[]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015 **REGION ID: 02**

Site Name: CORNELL DUBILIER ELECTRONICS, INC.

CERCLIS ID: NJD981557879

OUID: 04

SSID: 02GZ

Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
283114	02/18/2014	CORRESPONDENCE REGARDING OPPORTUNITY TO SUBMIT COMMENTS TO THE NATIONAL REMEDY REVIEW BOARD REGARDING THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	3	[LETTER]	[]	[]	[]	[]
283115	02/18/2014	CORRESPONDENCE REGARDING OPPORTUNITY TO SUBMIT COMMENTS TO THE NATIONAL REMEDY REVIEW BOARD REGARDING THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	3	[LETTER]	[]	[]	[]	[]
283116	03/05/2014	CORRESPONDENCE INFORMING DSC OF A TIME EXTENSION TO SUBMIT A STATEMENT TO THE NATIONAL REMEDY REVIEW BOARD REGARDING THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[E MAIL MESSAGE]	[]	[]	[]	[]
283117	03/05/2014	CORRESPONDENCE INFORMING CORNELL DUBILIER ELECTRONICS INCORPORATE OF A TIME EXTENSION TO SUBMIT A STATEMENT TO THE NATIONAL REMEDY REVIEW BOARD REGARDING THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[E MAIL MESSAGE]	[]	[]	[]	[]
283118	03/06/2014	CORRESPONDENCE INFORMING DSC THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NRRB AND SUBMITTAL OF STAKEHOLDER INFORMATION PACKAGE REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	5	[LETTER]	[]	[]	[]	[]
283119	03/06/2014	STAKEHOLDER INFORMATION PACKAGE TO AID STAKEHOLDERS IN PREPARING SUBMISSIONS TO THE NATIONAL REMEDY REVIEW BOARD REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	58	[REPORT]	[]	[]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]
283120	03/06/2014	CORRESPONDENCE INFORMING CORNELL DUBILIER ELECTRONICS INCORPORATED THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NRRB AND SUBMITTAL OF STAKEHOLDER INFORMATION PACKEAGE REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	5	[LETTER]	[SANOFF, ROBERT S]	[FOLEY, HOAG & ELIOT]	[FLANAGAN, SARAH P]	[US ENVIRONMENTAL PROTECTION AGENCY]
283121	03/06/2014	CORRESPONDENCE INFORMING CORNELL DUBILIER ELECTRONICS INCORPORATED THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NATIONAL REMEDY REVIEW BOARD REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[E MAIL MESSAGE]	[SANOFF, ROBERT S]	[FOLEY, HOAG & ELIOT]	[FLANAGAN, SARAH P]	[US ENVIRONMENTAL PROTECTION AGENCY]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015 **REGION ID: 02**

Site Name: CORNELL DUBILIER ELECTRONICS, INC.
CERCLIS ID: NJD981557879
OUID: 04
SSID: 02GZ
Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
283122	03/06/2014	CORRESPONDENCE INFORMING THE TOWNSHIP OF PISCATAWAY, NEW JERSEY THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NATIONAL REMEDY REVIEW BOARD REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2	[E MAIL MESSAGE]	[WAHLER, BRIAN C]	[TOWNSHIP OF PISCATAWAY]	[PRINCE, JOHN]	[US ENVIRONMENTAL PROTECTION AGENCY]
283123	03/06/2014	CORRESPONDENCE INFORMING THE EDISON WETLANDS ASSOCIATION THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NATIONAL REMEDY REVIEW BOARD REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	6	[E MAIL MESSAGE]	[SPIEGEL, ROBERT]	[EDISON WETLANDS ASSOCIATIONS, INC.]	[PRINCE, JOHN]	[EPA, REGION 2]
283124	03/06/2014	CORRESPONDENCE INFORMING THE PISCATAWAY TOWNSHIP THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NATIONAL REMEDY REVIEW BOARD AND SUBMITTAL OF THE STAKEHOLDER INFORMATION PACKAGE REGARDING OU4 FOR CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[WAHLER, BRIAN C]	[TOWNSHIP OF PISCATAWAY]	[PRINCE, JOHN]	[EPA, REGION 2]
283125	03/06/2014	CORRESPONDENCE INFORMING THE EDISON WETLANDS ASSOCIATION THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NRRB AND SUBMITTAL OF STAKEHOLDER INFORMATION PACKAGE REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[SPIEGEL, ROBERT]	[EDISON WETLANDS ASSOCIATIONS, INC.]	[PRINCE, JOHN]	[EPA, REGION 2]
283126	03/06/2014	CORRESPONDENCE INFORMING SOUTH PLAINFIELD, NEW JERSEY THAT US EPA WILL EXTEND THE TIME TO SUBMIT COMMENTS TO THE NRRB AND SUBMITTAL OF STAKEHOLDER INFORMATION PACKAGE REGARDING OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1	[LETTER]	[ANESH, MATTHEW P]	[BOROUGH OF SOUTH PLAINFIELD]	[PRINCE, JOHN]	[EPA, REGION 2]
283127	09/23/2014	TRIP REPORT - BENZIDINE SAMPLING ON 08/05/2014 FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	16	[REPORT]	[]	[]	[]	[]
283128	09/26/2014	SUPPLEMENTAL RISK EVALUATION OF BENZIDINE FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	8	[MEMORANDUM]	[AUSTIN, MARK]	[EPA, REGION 2]	[METZ, CHLOE]	[EPA]
283130	09/26/2014	NATIONAL REMEDY REVIEW BOARD RECOMMENDATIONS FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	7	[MEMORANDUM]	[MUGDAN, WALTER E]	[US ENVIRONMENTAL PROTECTION AGENCY]	[LEGARE, AMY R]	[US ENVIRONMENTAL PROTECTION AGENCY]
283133	09/26/2014	FINAL RISK ASSESSMENT REPORT FOR OU4 - BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	438	[REPORT]	[]	[]	[,]	[THE LOUIS BERGER GROUP, INC., US ARMY CORPS OF ENGINEERS]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015

REGION ID: 02

Site Name: CORNELL DUBILIER ELECTRONICS, INC.
CERCLIS ID: NJD981557879
OUID: 04
SSID: 02GZ
Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
283134	09/26/2014	FINAL RISK ASSESSMENT REPORT - APPENDICES A THROUGH K FOR OU4 - BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	2664	[REPORT]	[]	[]	[,]	[THE LOUIS BERGER GROUP, INC., US ARMY CORPS OF ENGINEERS]
283135	09/26/2014	FINAL RISK ASSESSMENT REPORT - APPENDIX L FOR OU4 - BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1033	[REPORT]	[]	[]	[,]	[THE LOUIS BERGER GROUP, INC., US ARMY CORPS OF ENGINEERS]
283132	09/26/2014	FINAL FEASIBILITY STUDY REPORT FOR OU4 - BOUND BROOK FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	683	[REPORT]	[]	[]	[,]	[THE LOUIS BERGER GROUP, INC., US ARMY CORPS OF ENGINEERS]
291659	06/27/1997	HISTORICAL DATA SAMPLING FROM 1997 THROUGH 2007 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	54	[CHART / TABLE]	[]	[]	[]	[]
108580	07/02/1997	Report: Sampling Trip Report, prepared by Mr. Michael Mahnkopf, Region II START Project Manager, Roy F. Weston, Inc., prepared for U.S. EPA, Region II, July 2, 1997.	21	[REPORT]	[,]	[EPA, REGION 2]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
108583	02/01/1998	Report: Final Report, Vacuum Dust Sampling, Cornell Dubilier Electronics, South Plainfield, New Jersey, prepared by Roy F. Weston, Inc., prepared for U.S. EPA, Region II, February 1998.	59	[REPORT]	[,]	[EPA, REGION 2]	[,]	[ROY F. WESTON, INC.]
108584	06/25/1998	Letter to Mr. Eric Wilson, On-Scene Coordinator, Removal Action Branch, U.S. EPA, Region II, from Mr. Michael Mahnkopf, Project Manager, Roy F. Weston, Inc., re: Tier I Residential Sampling and Analysis Summary Report, . . .	620	[REPORT]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
108587	07/01/1998	Report: Final Report, Vacuum Dust Sampling, Cornell Dubilier Electronics, South Plainfield, New Jersey, prepared by Roy F. Weston, Inc., prepared for U.S. EPA, Region II, July 1998.	165	[REPORT]	[,]	[EPA, REGION 2]	[,]	[ROY F. WESTON, INC.]
108585	07/02/1998	Letter to Mr. Eric Wilson, On-Scene Coordinator Removal Action Branch, U.S. EPA, Region II, from Mr. Michael Mahnkopf, Project Manager, Roy F. Weston, Inc., re: Tier II Residential Sampling and Analysis Summary Report, Cornell Dubilier Electronics, . . .	566	[REPORT]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
108586	07/10/1998	Letter to Mr. Eric Wilson, On-Scene Coordinator Removal Action Branch, U.S. EPA, Region II, from Mr. Michael Mahnkopf, Project Manager, Roy F. Weston, Inc., re: Tier III Residential/Neighborhood Sampling and Analysis Summary Report ...	171	[LETTER]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
108588	12/01/1998	Report: Final Report, Vacuum, Wipe, and Soil Sampling, Cornell Dubilier Electronics, South Plainfield, New Jersey, prepared by Roy F. Weston, Inc., prepared for U.S. EPA, Region II, December 1998.	77	[REPORT]	[,]	[EPA, REGION 2]	[,]	[ROY F. WESTON, INC.]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/12/2015

REGION ID: 02

Site Name: CORNELL DUBILIER ELECTRONICS, INC.

CERCLIS ID: NJD981557879

OUID: 04

SSID: 02GZ

Action: BOUND BROOK

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
291657	01/01/1999	PRELIMINARY ASSESSMENT AND SITE INVESTIGATION FOR THE SPRING LAKE PCB CONTAMINATION SITE	216	[REPORT]	[]	[]	[,]	[NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION]
108589	02/16/1999	Letter to Mr. Eric Wilson, On-Scene Coordinator Removal Action Branch, U.S. EPA, Region II, from Mr. Michael Mahnkopf, Project Manager, Roy F. Weston, Inc., re: Tier I Residential Sampling and Analysis Summary Report, Addendum No. 1 - ...	86	[REPORT]	[WILSON, ERIC J]	[US ENVIRONMENTAL PROTECTION AGENCY]	[MAHNKOPF, MICHAEL]	[ROY F. WESTON, INC.]
200008	01/01/2009	REDACTED FINAL DATA CHARACTERIZATION REPORT FOR SOIL AND INTERIOR DUST SAMPLING FOR OU1 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	157	[REPORT]	[,]	[US ARMY CORPS OF ENGINEERS - KANSAS CITY DISTRICT]	[,]	[MALCOLM PIRNIE, INC.]
712226	05/09/2011	BOUNDARY-PERIMETER SAMPLING BY SEVENSON FOR OU2-OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	7	[CHART / TABLE]	[]	[]	[]	[]
291658	05/15/2013	QUALITY ASSURANCE PROJECT PLAN FOR OU4 FIELD MODIFICATION FORM NO. 9 VETERANS MEMORIAL PARK - FLOODPLAIN SOIL INVESTIGATION FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	20	[PLAN]	[]	[]	[,]	[LOUIS BERGER GROUP, INC.]
712130	09/30/2014	PROPOSED PLAN FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	41	[PLAN]	[]	[]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]
712443	09/30/2014	RESPONSES TO NATIONAL REMEDY REVIEW BOARD RECOMMENDATIONS FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	10	[MEMORANDUM]	[LEGARE, AMY R]	[US ENVIRONMENTAL PROTECTION AGENCY]	[MUGDAN, WALTER E]	[US ENVIRONMENTAL PROTECTION AGENCY]
292523	06/01/2014	FINAL REMEDIAL INVESTIGATION REPORT FOR OU4 WITH APPENDICES A THROUGH G FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	716	[REPORT]	[,]	[US ARMY CORPS OF ENGINEERS]	[,]	[LOUIS BERGER GROUP INCORPORATED]
292524	06/01/2014	APPENDIX H - REMEDIAL INVESTIGATION FIELD NOTES OF THE FINAL REMEDIAL INVESTIGATION REPORT FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	1073	[REPORT]	[,]	[US ARMY CORPS OF ENGINEERS]	[,]	[LOUIS BERGER GROUP INCORPORATED]
292525	06/01/2014	APPENDICES I THROUGH O OF THE FINAL REMEDIAL INVESTIGATION REPORT FOR OU4 FOR THE CORNELL DUBILIER ELECTRONICS INCORPORATED SITE	3860	[REPORT]	[,]	[US ARMY CORPS OF ENGINEERS]	[,]	[LOUIS BERGER GROUP INCORPORATED]

APPENDIX III
State Letter

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SITE REMEDIATION PROGRAM
Mail Code 401-06
P. O. Box 420
Trenton, New Jersey 08625-0420
Tel. #: 609-292-1250
Fax. #: 609-777-1914

MAY 08 2015

Mr. Walter Mugdan, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, NY 10007-1866

Re: Cornell-Dubilier Electronics, Inc., Superfund Site
Record of Decision
EPA ID# NJD981557879
DEP PI# G000005878

Dear Mr. Mugdan:

The New Jersey Department of Environmental Protection (DEP) completed its review of the "Record of Decision, Operable Unit 4 Bound Brook Cornell-Dubilier Electronics, Inc. Site, South Plainfield Borough, Middlesex County, New Jersey" prepared by the U.S. Environmental Protection Agency (EPA) Region II in March 2015 and concurs with the selected remedy to address contaminated sediment, floodplain soils and groundwater impacting the Bound Brook corridor as part of Operable Unit Four (OU4) of this site.

DEP supports this Record of Decision and selected remedies to address contamination affecting the Bound Brook from previous operations at the Cornell-Dubilier site. The selected remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the Administrative Record file for this site. The response action selected in this Record of Decision is necessary to protect public health and the environment from actual releases of hazardous substances into the environment.

The components of the selected OU4 remedy include:

- excavation of floodplain soils and Bound Brook sediments containing polychlorinated biphenyls (PCBs) above 1 milligram per kilogram (mg/kg) with off-site disposal;

- after soil and sediment removal to 1 mg/kg, monitored natural recovery of the Bound Brook sediments to a remediation goal of 0.25 mg/kg PCBs;
- excavation of buried PCB-contaminated capacitors present, followed by off-site disposal;
- hydraulic containment and treatment of groundwater contaminated with trichloroethylene that discharges to the Bound Brook to prevent the release of groundwater contaminants to surface water; and,
- relocation of a 36-inch waterline that traverses the former Cornell-Dubilier site to protect the integrity of the facility remedy and future remedies implemented in the Bound Brook.

DEP appreciates the opportunity to participate in the decision making process to select an appropriate remedy and is looking forward to future cooperation with EPA in remedial action at this site.

If you have any questions, please call me at 609-292-1250.

Sincerely,

Mark J. Pedersen
Assistant Commissioner
Site Remediation Program

C: Ken Kloo, Director, Division of Remediation Management, DEP
Ed Putnam, Assistant Director, Publicly Funded Response Element, DEP
Carole Petersen, Chief, New Jersey Remediation Branch, EPA Region II

APPENDIX IV
Responsiveness Summary

APPENDIX IV
RESPONSIVENESS SUMMARY
Cornell-Dubilier Electronics Superfund Site
South Plainfield, New Jersey

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and concerns regarding the Proposed Plan for the Cornell Dubilier Electronics (CDE) site and the U.S. Environmental Protection Agency's (EPA's) responses to those comments. All comments summarized in this document have been considered in EPA's final decision for the selection of the remedy for the site.

This Responsiveness Summary is divided into the following sections:

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS
This section provides the history of community involvement and interests regarding the site; and

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS AND RESPONSES
This section contains summaries of written and verbal comments received by EPA at the public meeting and during the public comment period, and EPA's responses to these comments.
The last section of this Responsiveness Summary includes attachments, which document public participation in the remedy selection process for this site. They are as follows:

Attachment A contains the Proposed Plan that was distributed to the public for review and comment;
Attachment B contains the public notices that appeared in a prominent local newspaper, *The South Plainfield Observer*;
Attachment C contains the transcripts of the public meeting; and
Attachment D contains the public comments received during the public comment period.

Section I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

Since the placement of the site on the National Priorities List (NPL) in 1998, public interest in the site has been high.

On September 30, 2014, EPA released the Proposed Plan and supporting documentation for this action, the remedy for sediment, floodplain soil, and groundwater impacting Bound Brook from the former CDE facility property, referred to as Operable Unit 4 (OU4), to the public for comment. EPA made these documents available to the public in the administrative record repositories maintained at the EPA Region 2 office (located at 290 Broadway, New York, New York), and the South Plainfield Public Library, 2484 Plainfield Avenue, South Plainfield, New Jersey, and made a smaller group of documents available online (http://www.epa.gov/region02/superfund/npl/cornell/).

EPA published a notice of availability for these documents in *The South Plainfield Observer*, and opened a public comment period from September 30, 2014 to November 14, 2014. Originally scheduled for 45 days, the comment period was extended to 76 days at the request of a party wishing to submit comments, and ended on December 15, 2014. A public meeting was held on October 21, 2014, at the South Plainfield Senior Center, 90 Maple Avenue, South Plainfield, New Jersey. The purpose of this meeting was to inform local officials and interested citizens about the Superfund process, to discuss the Proposed Plan and receive comments on the Proposed Plan, and to respond to questions from area residents and other interested parties. EPA received written and verbal comments from 95 individuals or parties, including several hours of verbal comments at the public meeting.

Section II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS AND RESPONSES

PART 1. Written Comments

Comment #1: Extending the Public Comment Period - A representative of Exxon Mobil Corporation asked that EPA extend the comment period.

EPA Response - The comment period was extended 31 days, to December 15, 2014.

A comment letter was submitted from Zoch Consultants, LLC, on behalf of Exxon Mobil Corporation (Exxon Mobil), described as "the potential indemnitor of certain insurers against whom … CDE has brought a claim for coverage related to the Site."

Comment #2: Section 1.0, Nature of Response. This comment presented Exxon Mobil's view of "relevant factual background information." Exxon Mobil characterized the OU2 remedial action as a "PCB source control” action and described the OU3 and OU4 response actions as addressing only PCBs.

EPA Response - This comment generally requires no response except to clarify two apparent inaccuracies. First, the OU2 remedy was not simply a PCB source control remedy. The OU2 remedy addressed unacceptable risks to human health and the environment associated with contaminants of concern including PCBs, VOCs and lead by eliminating significant direct-contact risks associated with contaminated soil and buildings at the former facility property, and by reducing or eliminating sources of contamination to other media including groundwater and Bound Brook.

Second, the OU3 remedy addresses both PCBs and VOCs that are found at elevated concentrations in site groundwater. The OU4 remedy, while focused primarily on PCBs, also addresses the VOCs that continue to be released from the former CDE facility to Bound Brook.

Comment #3: Section 2.0, Nature of Contaminant of Concern. Exxon Mobil stated that PCBs are hydrophobic, and due to their low water solubility, are not subject to significant migration; and that PCBs are stable in the environment and “eventually degrade to relatively harmless constituents.”

EPA Response - While PCBs are the primary contaminant of concern for OU4, they are not the only contaminant of concern for the Site. VOCs are also contaminants of concern for the Site at OU2 and OU4 portions of the site, and contributed to the basis for the NPL listing. VOCs are the primary contaminant of concern for OU3. For OU2, in addition to PCBs, contaminants of concern include VOCs and lead.

At the CDE site, elevated total PCB concentrations in the surface water, porewater, and sediments coincide with total VOC porewater detections, suggesting that chlorinated solvents in the groundwater are enhancing the mobility of PCBs due to co-solvency.

PCBs are generally considered persistent in the environment because they tend to break down in the environment over such long periods of time. While PCBs do degrade naturally over time through dechlorination, under certain environmental conditions, the process, though reducing toxicity, does not make them harmless.

Comment #4: Section 3.0, Proposed Plan for Capacitor Debris. While Exxon Mobil agreed with EPA’s proposal to excavate the capacitor debris for off-site disposal, Exxon Mobil commented that: 1) it is doubtful the remediation goal of 1 milligram/kilogram (mg/kg) [Exxon Mobil uses parts per million, or ppm, but for clarity and consistency with the remedial investigation and feasibility study (RI/FS) and decision documents EPA will use the mg/kg terminology] can be achieved; 2) the remediation goal of 1 mg/kg is not necessary because it is higher than the remediation goal for OU2 and instead a goal should be "as low as reasonably achievable" to be determined by a pre-design investigation to investigate construction adjacent to and under Bound Brook; and, 3) the cost estimate "appears excessive" because it presents a higher cost per cubic yard for addressing the capacitor debris area than the cost of excavating material as part of the OU2 remedy.

EPA Response - The higher PCB remediation goal for soil at the former CDE facility (OU2) compared to the goal for the OU4 capacitor debris (CD) area does not support Exxon Mobil's claim that 1 mg/kg would not be reasonably achievable. A number of factors distinguish the capacitor debris area addressed in OU4 from the capacitor disposal area addressed in OU2, making a different remedial goal both appropriate and achievable.

The term "as low as reasonably achievable" is terminology generally used for sites with radionuclide contamination. Pre-design investigations will establish EPA's understanding of the CD area extent and depth to bedrock. The goal will be to remove overlying soil containing PCBs above the cleanup goal down to the top of the bedrock, which is expected to be approximately 5 to 6 feet below the surrounding grade in the adjacent wetland. The OU4 CD area is close to Bound Brook and impinges on a wetland area. The uses and natural characteristics of this area are distinct from those of the OU2 capacitor disposal area, which was located in an upland area in the middle of a commercial/industrial property, and which is anticipated to remain commercial/industrial. The potential for continued releases of PCBs and VOCs is substantial if the contaminated media are not removed from the OU4 CD area.

Exxon Mobil's comment about the estimated cost appears to compare the cost estimate provided in the OU4 Proposed Plan, developed during the OU4 FS, to the cost incurred for services performed by Sevenson Environmental Services, Inc., the contractor that performed the excavation of a part of the OU2 cleanup known as the "capacitor disposal area," which encompassed 13,700 cubic yards. The cost cited - $5,507,000 – does not represent the full cost of excavation of the CD area. Further, Exxon Mobil does not explain which elements of the cost estimate are excessive.

Comment #5: Section 4.1, Regional Flood Control Project. Exxon Mobil referred to the Green Brook Flood Control Project, stating that EPA’s proposed plan identified that the Project is a basis for excluding in-place contaminant capping alternatives. Exxon Mobil suggested there may be “cost-sharing opportunities” associated with the implementation of the Flood Control Project, which should not be difficult because the U.S. Army Corps of Engineers (USACE) will administer both the Flood Control Project and the remedial action.

EPA Response - In the Proposed Plan, EPA explained that stakeholders in the Green Brook Flood Control Project would likely object to capping alternatives as these could reduce flood storage capacity, which would be detrimental to flood control. EPA will coordinate with the authorities responsible for the Green Brook Flood Control Project (USACE and the New Jersey Department of Environmental Protection, NJDEP) during the remedial design for the sediment removal. However, Exxon Mobil appears to misunderstand the capacity in which USACE provides services to EPA. While the USACE may provide services to EPA during design and implementation of the remedial action, the action is performed pursuant to EPA’s authority.

At the CDE site, the USACE has acted as EPA’s lead contractor in the performance of the remedial actions for OU1 and OU2, and also has contracted for the performance of the RI/FS for OU3 and OU4. In doing so, the USACE responds to EPA’s staff who manage the Interagency Agreement, and to the direction of the Remedial Project Manager (RPM).

In contrast, the Green Brook Flood Control Project is authorized under Section 401a of the Water Resources Development Act (WRDA) of 1986. In performing the flood control work, the USACE is acting under WRDA, together with NJDEP as the local sponsor. Funding for WRDA flood control work is authorized annually by Congress for implementation of WRDA projects. Such funds are not available for CERCLA remediation. EPA will coordinate with the stakeholders in the Green Brook Flood Control Project to ensure that any flood control actions do not interfere with EPA’s remedial action. However, CERCLA work will not be performed as part of the flood control project. An example of how the flood control work will be performed in coordination with CERCLA remedial work can be seen at the Brook Industrial Park Superfund site, which is also within the geographic scope of the Green Brook Flood Control Project, where the USACE waited for completion of the remedial action before constructing flood control measures.

Comment #6: Section 4.2, Sediment Removal - For the Bound Brook portion of the sediment removal, Exxon Mobil stated a preference that EPA divert stream flow and excavate sediments after dewatering. Exxon Mobil also recommended that EPA incorporate techniques used in a recent sediment removal project in Portage Creek, Michigan.

EPA Response - As stated in the Proposed Plan, diverting the stream and excavating sediments will allow for marginally better sediment management performance during the removal, and appears to be a better fit with several of the groundwater alternatives, and is also less costly. For these reasons, stream diversion and excavation was assumed for cost-estimating purposes. However, it is possible that a combination of excavation and dredging would be used, depending on conditions encountered by EPA. The final decision will be made during remedial design.

EPA is familiar with the Portage Creek sediment removal (which was conducted as a Time Critical Removal Action, as opposed to a remedial action) and will review the experience at Portage Creek during remedial design.

Comment #7: Section 4.2, New Market Pond. Exxon Mobil commented that New Market Pond was dredged in 1985-1986. Exxon Mobil characterizes data from low resolution core samples collected in the pond as showing maximum PCB concentrations of less than 5 mg/kg in the upper 18 inches of sediment, with rapid attenuation to background or undetected concentrations below that, and concluded that the data are insufficient to warrant dredging 99,000 yd^3 of sediment from New Market Pond. Exxon Mobil noted that the high resolution core showed elevated PCB concentrations, including 11 mg/kg near the surface and suggested that this may indicate higher levels in isolated areas of New Market Pond that may not have been dredged and/or currently exceed 1 mg/kg. Exxon Mobil concluded that New Market Pond acts as a sedimentation basin for sediments transported downstream by erosional effects and hot spot PCB levels may exist in areas of the pond that were not dredged in the 1980s, or have since been recontaminated, and that EPA should conduct a pre-design investigation to more extensively delineate PCB contamination that will allow for excavation/dredging of PCB hot spots and contaminated sediment horizons, which will be more “ecologically friendly” than extensive sediment dredging in the pond.

EPA Response - As stated in the Proposed Plan, the pond was dredged in 1985-1986 to a projected depth of three feet on the eastern side, transitioning to six feet on the western end near the dam.

During dredging, a silt trap was constructed and the dam was rebuilt. Fine grained sediments accumulate behind the dam.

EPA does not agree that the PCB contamination in New Market Pond is insufficient to warrant a remedial action, including dredging. The OU4 RI/FS found that recently-deposited material in New Market Pond is likely to include both PCB-contaminated sediments and less-contaminated sediments resuspended by flow traveling through the various upstream reaches which include both CDE-impacted and “upstream/background” sediment types. On the margins of the pond, in areas not dredged in the 1980s, sediment profiles are different than in the dredged areas and are likely to contain larger volumes of pre-1980 sediments and associated contamination. Total PCB concentrations in New Market Pond sediment ranged from 0.27 to 4.7 mg/kg with a mean concentration of 2.6 mg/kg. To meet EPA’s remediation goal of 1 mg/kg in PCB-contaminated sediments, full dredging of New Market Pond is likely required.

The Township of Piscataway will likely perform maintenance dredging in years to come, so more complete dredging will tend to avoid resuspension and recontamination from such future dredging. In contrast, the reach of the brook downstream from New Market Pond contains isolated deposits of sediments that can more easily be addressed in a targeted approach.

However, EPA agrees that a pre-design investigation is appropriate. If the pre-design investigation shows that it is feasible to identify areas of the pond that are clearly segregable and can be excluded from dredging, without undermining the remedial action objectives and remediation goals, EPA will take that into consideration to optimize the remedy.

Comment #8: Section 4.3, Floodplain Soils. Exxon Mobil comments that excavation of floodplain soils to a depth of up to five feet is neither necessary nor consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), taking issue with the quality and quantity of EPA’s data, EPA’s analysis of the data, and the remediation goal of 1 mg/kg.

EPA Response - As discussed below in response to Comment #10, EPA does not agree that the data and data analysis support a higher remediation goal.

Comment #9: Section 4.3.1, Data Quality. Exxon Mobil asserts that data collected by EPA in 1999 are not representative of current conditions, and that some more recent PCB data were estimated values below the method detection limit and of questionable value.

EPA Response - EPA disagrees with Exxon Mobil’s comment regarding the utility of the 1999 floodplain data. Potential changes on Bound Brook sediment due to major storm events were examined before and after significant storms as part of the RI. This examination concluded that there are similar contaminant gradients in recently deposited sediment; this conclusion could be extended to floodplain contaminant gradients. Therefore, EPA would expect concentration trends detected in the floodplains in 1999 to still be representative. In addition, while 0-2 inch samples collected in 1999 may no longer represent the current 0-2 inch horizon in the floodplain (due to more recent accumulation of organic material), EPA evaluated 1-foot thick soil horizons in the floodplain for the RI/FS and the 1999 data would still be expected to constitute part of that 0-1 foot surface layer. Predesign investigation (PDI) sampling will gather additional data where appropriate to confirm EPA’s understanding.

In regard to some of the recent PCB data being estimated values below the detection limit and of questionable value, Exxon Mobil is taking the RI’s reference to a “5X the detection limit” criterion out of context. The J-flagged estimated PCB results are usable data for the purposes of the RI/FS evaluation. The RI’s reference to 5X the detection limit applied only to Be-7 radionuclide data from the surface sediment samples, where it was used to determine a threshold over which a sample would be considered “Be-7 bearing” and, therefore, recently deposited, for geochemical conceptual site modeling (CSM) purposes.

Comment #10: Section 4.3.2, Remediation Goal. Exxon Mobil agrees that the remediation goal of 1 mg/kg is reasonable for PCB-contaminated sediment in order to reduce fish tissue impacts but objects to use of this remediation goal for floodplain soils because: 1) floodplain soil PCB contamination is not impacting stream sediment; 2) the 1 mg/kg remediation goal was determined in the site-specific risk assessment based on a residential exposure value for direct contact for a child, whereas “all residential exposures were addressed” under the OU1 ROD and there are no current or projected residential exposures attributable to OU4; 3) EPA guidance identifies a PRG starting point for non-residential land use of 10 ppm to 25 ppm, and EPA identified a land use for the floodplains of “residential-parklands”, which is conservative instead of “protective” as required by the NCP, and this exposure definition is arbitrary and inconsistent with the NCP; 4) the Ambrose Brook area floodplain soil contained PCB concentrations of up to 1.6 mg/kg, which is higher than the proposed 1 mg/kg PRG.

Exxon Mobil concludes that a “performance standard goal” of 5 mg/kg PCBs, which was “determined as protective” for the Portage Creek project or the “approximate” 2 mg/kg PCB level achieved at Portage Creek would be protective of the actual current and future use anticipated for exposure to Bound Brook floodplain soils.

EPA Response - As explained in the Proposed Plan, EPA identified 1 mg/kg PCBs as the remediation goal for sediments and floodplain soil in the study area based on a number of factors. With respect to floodplain soils, EPA considered a site-specific "residential-parklands" land use. The potential for adverse health effects from exposure to soil in residential yards is being addressed as part of OU1. The evaluation of a residential-parklands scenario in OU4 is not an evaluation of actual residential exposure, but an evaluation that is protective of most other receptor populations that may access floodplain areas within OU4.

The guidance referred to by Exxon Mobil, while not identified, is likely EPA’s August 1990 guidance entitled “Guidance on Remedial Actions at Superfund Sites with PCB contamination” which recommends a cleanup goal between 10 - 25 mg/kg as a starting point for developing PRGs for areas where land use is industrial, or that are remote from residential areas. A remediation goal of 10 mg/kg or above would be not appropriate for floodplain soils, especially in areas that are used largely for recreation and are located in a densely populated residential area. The residential-parklands land use provides an appropriate degree of protectiveness, and it is representative of actual and reasonably anticipated land use, and exposure, in the floodplain. This exposure scenario for a resident child would yield a 10^{-6} incremental lifetime cancer risk-based preliminary remediation goal (PRG) of 0.76 mg/kg, and a noncancer-based PRG of 2.6 mg/kg.

New Jersey's promulgated nonresidential direct-contact soil remediation standard for PCBs is 1 mg/kg. New Jersey has identified 1 mg/kg the appropriate standard for the floodplain soils. Selecting 1 mg/kg as the remediation goal is consistent with the NCP, whereas the higher remediation goals suggested by Exxon Mobil would not be effective in reducing exposure to within a protective risk range as contemplated by the NCP, nor would it comply with New Jersey PCB soil remediation standard for soil, which is an ARAR.

Under current conditions, the floodplain is a depositional area relative to most of the stream channel and probably does not act as a significant source to the Bound Brook. However, using a higher remediation goal (2 mg/kg or 5 mg/kg) in the floodplain would allow these soils to recontaminate the sediments. Similarly, the fact that EPA detected PCBs in the Ambrose Brook floodplain above the 1 mg/kg remediation goal (sample results actually ranged from 0.029 to 1.59 mg/kg) does not support a conclusion that 1 mg/kg is inconsistent with the NCP. The remediation goal is protective, as required by the NCP. The fact that a higher “performance standard” was utilized for the Portage Creek removal action does suggest otherwise.

Comment #11: Section 4.3.3, Application of Direct Contact Criteria. Exxon Mobil states that direct contact criteria should apply to potential exposure to surface soils, defined as the upper two feet of soil (or a minimum of 10 inches under the PCB Spill Policy under the Toxic Substances Control Act (TSCA)), and that excavating soil to a lower depth is inconsistent with a response to surface soil exposure. EPA’s preferred remedy called for excavation to an average depth of three feet (two to three feet in upland areas and four to five feet along stream banks). Exxon Mobil suggests that excavation should not exceed two feet.

EPA Response - The Feasibility Study, and the preferred alternative, appropriately incorporated conservative assumptions with regard to extent of contamination resulting in an estimate (using a 3-foot average excavation depth) of 150,000 cubic yards. EPA’s pre-design investigation will more definitely establish the depth and volume of contaminated soil.

Where the depth of contamination exceeds two feet, it would not be protective to simply remove two feet and leave contaminated material at the post-excavation surface. Presumably Exxon Mobil is suggesting that EPA would cap the remaining contaminants, to avoid direct contact as well as recontamination of Bound Brook. In Alternative SS-3, EPA evaluated the potential for capping in areas of the floodplain where capping could be implemented without disrupting normal surface water flow patterns. However, EPA did not select capping as part of the remedy, for a number of reasons. Capping would not be suitable in the floodplain bordering the streambed because of the potential for disrupting normal surface water flow patterns and the need for extensive armoring to protect the cap during high flow conditions. In the areas of the floodplain where capping would be more feasible, the average depth of contamination is less, so the end result would be excavation of two feet of soil, and installation of a cap, over a relatively thin layer of PCB-contaminated soil. The cap would require maintenance in perpetuity. Moreover, much of the area that could be capped is used for recreation; even with use restrictions in place, a cap might not be sufficiently protective.

The reason for the reference to TSCA is unclear. TSCA regulates disposal of PCBs at concentrations of 50 mg/kg or greater. With respect to CERCLA remediation of soil and sediment, the CERCLA risk-based cleanup approach guided by the NCP, and by Superfund guidance, policy and procedure, is consistent with the TSCA Spill Cleanup Policy.

Comment #12: Section 4.3.4, Extrapolation of Limited Data. Exxon Mobil states that the method used by EPA to estimate the spatial distribution of contaminants in the floodplain is applicable for interpolation between data points, not extrapolation outside of data coverage, and is an improper basis for estimating areas of concern for remediation purposes.

EPA Response - Theissen polygons were used to interpret the soil boring data collected from a gridded area. As part of the RI (shown in RI Figure 5-13), polygons were not applied on or between soil borings located on transects. Moreover, the individual soil samples at the confluence of Bound Brook and Cedar Brook are also displayed on RI Figure 5-14. A comparison of Figure 5-14 (individual points) and Figure 13 Sheet 5 (polygons) shows that Exxon Mobil’s comment regarding data that were “extrapolated outside areas of data coverage” is incorrect. It was correctly stated that, Theissen polygons are applicable when data are interpolated between points, as it is presented in the RI.

Comment #13: Section 4.3.5, Analysis of RI Data. Exxon Mobil predicts that even with a 1 mg/kg PCB remediation goal, only limited excavations along the banks of Bound Brook or within a 10-acre portion of Veterans Memorial Park would require excavation, because:

1) Transect data. Of 126 data points reported in RI, 65 were from 0-1 foot interval and 61 from 1-2 foot interval; all these data should be evaluated under “surface soil” exposure criteria. Only two of these values exceeded 10 mg/kg, in Transect 17, reported to be addressed as part of the Woodbrook Road Dump Site response and if those are eliminated, 83% are below 1 mg/kg and none exceed 10 mg/kg. Therefore, the data would meet the 75%/10x guideline for statistical compliance with 1 mg/kg surface soils exposure, under the compliance averaging procedure used by NJDEP for direct contact exposure and groundwater protection.
2) Grid data. High concentrations of PCBs were identified in floodplain soils in Grids A and B, with almost all of the value greater than 1 mg/kg near the banks of Bound Brook. Only one sample from deeper than 2 feet exceeded 1 mg/kg total

PCBs.

3) Veteran's Memorial Park Data. Random data from the 26 acres of floodplain in the park between Bound Brook and Cedar Brook were analyzed for total PCBs, and concentrations greater than 1 mg/kg were confined to a 10 acre area north of Bound Brook where seven soil and three sediment samples (indicative of wetlands) from 0 to six inches ranged from 2 mg/kg to 77 mg/kg.

Accordingly Exxon Mobil recommends that EPA's PDI samples be analyzed only for PCBs and be advanced within close grids stepping out from the stream banks. Following the excavation (which it states should be to a maximum two foot depth), it suggests confirmation testing should be based on surface-weighted average concentrations including a 75%/10x statistical criterion.

EPA Response - Overall, EPA will consider Exxon Mobil's recommendation for use of a close grid for the PDI. However, EPA does not expect to utilize the compliance averaging procedure used by NJDEP.

Regarding the Transect Data: A total of 67 borings were collected along transects in the floodplains. Borings were advanced to 90 centimeters (cm) in wetland areas and to 120 cm in areas not designated as wetlands, or to refusal. Per the risk assessment, only the top two intervals (0-30 cm and 30-60 cm) were analyzed. The remaining samples were archived. Of the 67 soil borings, only three encountered refusal such that only the top interval was analyzed. For the remaining 64 borings, the top two intervals were analyzed. Regarding Exxon Mobil's calculations, after removing Transect 17, there are a total of 84 soil samples with detectable quantities of Total PCB Aroclors. 22 of the 84 samples (or 35%) have Total PCB Aroclor ranging from 1-7.4 mg/kg. (These samples are located within Transects 1, 3, 5-7, and 11-16.) The remaining 62 samples (or 65%) have Total PCB Aroclor less than 1 mg/kg. Also, note that T17 is not being addressed as part of the Woodbrook Road Site response as Exxon Mobil indicates. As explained in the OU4 RI report, the surface soil contamination along this transect is likely not indicative of flooding but rather a potential historical placement of contaminated soils and was investigated by EPA as part of OU1 sampling along Kenneth Avenue.

Grid Data: A total of 54 borings were collected from gridded areas in the floodplains. Borings were advanced to 90 cm in wetland areas and to 120 cm in areas not designated as wetlands, or to refusal. Per the risk assessment, only the top two intervals (0-30 cm and 30-60 cm) were analyzed. The remaining samples were archived. Of the 54 borings, 10 borings encountered refusal and only the top interval was analyzed. For the remaining 44 borings, the top two intervals were analyzed. Due to elevated PCB Aroclor levels in these soil samples, any archived (deeper) samples available (total of 14 samples) were subsequently analyzed. Of the available archived samples (totaling 14 samples), one sample had Total PCB Aroclor greater than 1 mg/kg (G9B at 61-91 cm).

<u>For Veterans Memorial Park:</u> The 2013 Veterans Memorial Park samples were collected to fill in data gaps and confirm historical soil sample concentrations. As presented in EPA’s RI Figure 5-14, over 100 samples from eleven investigations from 1999-2013 were used to characterize Bound Brook and the floodplains between Bound Brook and Cedar Brook. Exxon Mobil is incorrect that “random data [were] collected” and that areas less than 1 mg/kg were characterized by seven soil samples.

Also, Exxon Mobil applies NJDEP criteria (75%/10x rule – footnote on pg. 11 of comment letter) to justify limiting excavation, but this is not appropriate with a limited RI data set. EPA’s volume estimates account for the limited RI sampling density – for example, if the PCB concentration in a grid cell was less than 1 mg/kg but the concentrations in surrounding cells were higher than 1 mg/kg, the cell was included as below 1 mg/kg in terms of a probable distribution of contaminants (based on available data).

EPA does concur in principle about intent of PDI sampling to define limits of contamination, but disagrees with Exxon Mobil’s baseline assumption about only investigating surface soils. EPA does not agree that PDI sampling should only address total PCBs and no other contaminants of potential concern.

See response to Comment #11 for discussion of why the flood plain excavation cannot be limited to the top two feet, while still allowing for a protective and implementable remedial action, consistent with the NCP.

Comment #14: Section 5.0, Groundwater. Exxon Mobil comments that EPA’s conclusion that bedrock porewater is contributing to stream sediment contamination is not persuasive. Exxon Mobil believes that the presence of a measurable impact of groundwater to sediment cannot be established. Exxon Mobil points to the measurements of ambient water quality that have not detected the presence of PCBs, and the maximum PCB concentration in surface water measure in the OU4 RI being 0.0011 micrograms/liter (ug/l), adjacent to the former CDE facility. The water solubility of PCB-1254 is 12 ug/l. Because the amount of PCB in surface water is a minute percentage of its water solubility, it will not precipitate to the sediment and even if it contacted the sediment would not result in a measurable impact. Under the current conditions, which result in continuing bedrock porewater impacts “from remaining capacitor debris” Exxon Mobil states there is negligible risk of downstream sediment contamination.

Exxon Mobil further states that under current CERCLA practice, contaminated groundwater is not considered “source material” impacting other media, and opines that the source of detected PCB concentrations in porewater is the remaining soil/debris containing thousands of ppm of PCB and located on both sides of Bound Brook downstream of the twin culverts at the Site. As described in the RI Report, most of the loading to the water column occurs within one-tenth of a mile downstream of the twin culverts at the location of the debris. The excavation of the capacitor debris (CD-4) component of the OU4 remedy will eliminate this source of porewater contamination and the potential groundwater migration pathway. The GW-3 remedy is not supported by the facts and is not necessary to prevent post-remediation sediment contamination. The groundwater remedy is not supported by the evidence and is therefore arbitrary and capricious. Instead EPA should select No Action for groundwater, extend the ARAR waiver for groundwater standards, and also continue the monitoring called for by the OU3 remedy.

EPA Response - The OU3 and OU4 RIs establish the basis for EPA’s conclusions that groundwater contaminated with both VOCs and PCBs is discharging into Bound Brook. The detected presence of VOCs in the porewater and sediments near the former CDE facility provide evidence to support this conclusion, and elevated total PCB concentrations in the surface water, porewater, and sediments coincide with total VOC porewater detections, suggesting that chlorinated solvents in the groundwater may be enhancing the mobility of PCBs due to co-solvency.

The OU4 RI did identify that PCB loading to the water column is occurring within one-tenth of a mile downstream of the twin culverts. Capacitor debris is located in the area of the twin culverts, but the capacitor debris is not present within the entire one-tenth mile area. While contaminated groundwater generally is not considered a source material under EPA guidance, nonaqueous phase liquids may be viewed as source materials. For OU4, the porewater discharge is associated with contaminated groundwater, not simply a result of buried debris. Selecting No Action for groundwater would allow the continued discharge of contaminated groundwater to Bound Brook and would not be protective of human health and the environment.

Comment #15: Section 6.0, Replacement of Water Line. Exxon Mobil comments that New Jersey American Water (NJAW) regularly replaces segments of the potable water system under its Distribution System Infrastructure Improvement System (DHSIS) program. Exxon Mobil states that the water line, though aged, does not have a history of breaks and is not expected to fail under the current DHSIS planning horizon, and that NJAW believes that the leak occurred previously as a result of heavy equipment damage by the remediation contractor.

Exxon Mobil comments that the reasonable methodology for addressing the water line would be to impose institutional controls, described as “restrictive easements and notifications to NJAW of potential environmental concerns associated with line failures or rehabilitation.” According to Exxon Mobil this is a common practice at other Superfund sites with utilities that cross remediated facilities even where residual contamination has been left in place; utility replacement is not among response actions considered in the NCP and should not be included here “considering Superfund budget restraints.”

EPA Response - The failure of the NJAW water line was not a simple leak, but a rupture. The failure occurred after the excavation around the water line had been completed. NJAW was present for the excavation work around the water line that took place during the remedial action, to assure that the water line was properly protected, and was satisfied with EPA’s excavation methods; but the pipe failed anyway. The property had been used for commercial purposes, with car and truck traffic, and will be again when redeveloped. The unanticipated occurrence of the rupture demonstrates that reliance on NJAW’s planning horizon is not sufficiently protective. Exxon Mobil’s assurance that the water line will not fail under the current planning horizon cannot ameliorate the risk that another substantial failure will occur, and unlike the last time the line ruptured, an open excavation will not be present to contain the runoff.

Exxon Mobil appears to propose that EPA select WL-2, i.e., monitoring, with replacement as necessary. EPA’s preference for moving the water line now is based on the expectation that it will eventually fail again, potentially harming the protectiveness of the remedy by transporting contaminated soil into Bound Brook and leading to a costly emergency response.

A representative of Edison Wetlands Association submitted the following comments:

Comment #16: EPA identified other potential impacts to the Bound Brook and its up gradient tributaries, which are not adequately addressed in the Proposed Plan for Operable Unit 4.

EPA Response – EPA investigated other potential sources that may have contributed to the contamination found in Bound Brook but concluded that no other source exists that could be directly associated with PCB contamination in Bound Brook. Further information on the investigation can be found in the OU4 RI Report.

Comment #17: Because CDE-related contamination spans such a vast, widely used area, the EPA must remove all PCBs and other contamination identified in the study area. EPA must stop the discharge of site-related contaminants that are actively discharging into the Bound Brook from CDE and Woodbrook Road Superfund Site.

EPA Response – The remedy will remove all PCB contamination in the study area considered to be a risk to human health and the environment. Part of EPA's remedy is to capture all site-related contaminated groundwater prior to it entering Bound Brook. Woodbrook Road is being addressed under a separate Record of Decision. In regard to Woodbrook having an impact on Bound Brook, EPA investigated this possibility and found that there is no impact from Woodbrook on Bound Brook.

Comment #18: We strongly recommend that EPA remove all the toxic PCBs from Bound Brook and New Market Pond so that there are no further threats to human health or the environment, as well as stop all sources of on-going contamination.

EPA Response – Agreed.

Comment #19: EPA must investigate if there are other potential capacitor disposal areas up gradient from the CDE Superfund site. EPA must carefully investigate the three upstream landfills between the CDE Superfund site and the Woodbrook Road Superfund site. The EPA must also investigate the South Plainfield Public Works garage for capacitor disposal areas.

EPA Response – See comment #16 above. This Record of Decision specifically addresses all PCB contamination and those sources contributing to this contamination in the Bound Brook corridor. EPA has not found areas upstream of the former CDE facility that are considered sources of PCB contamination to Bound Brook.

Comment #20: EPA must conduct a thorough biota study including the testing of fish, mammals and other animals such as bullfrogs, crayfish, turtles and other biota eaten from the Bound Brook for PCBs and other chemicals. EPA, NJDEP and federal and state health agencies must inform those who eat biota from the Bound Brook and Dismal Swamp Conservation Area (DSCA) of the results of the testing of these animals that live, reproduce and migrate through the Bound Brook and its tributaries.

EPA Response - The EPA's OU4 risk assessment documentation provides a comprehensive evaluation of the potential for adverse health effects on human consumption of fish and shellfish that might be collected from Bound Brook as well as ecological receptors in and along Bound Brook.

The human health risk assessment relied on measured PCB concentrations in the tissues of fish and shellfish from various locations along Bound Brook and concluded that consumption of fish and shellfish throughout the OU4 Study Area, as well as direct contact with sediment (at Exposure Unit 5) and floodplain soil (throughout the OU4 Study Area), pose potentially unacceptable non-cancer hazards and increased cancer risks. EPA used this known exposure pathway (fish/shellfish) to demonstrate that human exposure through consumption poses an unacceptable risk. There are no demographic groups in this section of Middlesex County that would lead EPA to consider PCB exposures through non-traditional exposure endpoints (such as small mammals or amphibians) that might differ substantially from fish/shellfish consumption. Although not specifically evaluated in this assessment, it can be reasonably inferred that human consumption of other wildlife collected in or along Bound Brook may also pose potential adverse health effects based on the bioaccumulation potential of PCBs and the food web modeling to support the ecological risk assessment.

Further, the ecological risk assessments also relied on measured PCB concentrations in the tissues of shellfish, fish, and small mammals collected at various locations along Bound Brook, and measurements of the bioaccumulation potential of PCBs in aquatic and terrestrial invertebrates from some of the more highly contaminated sediments and floodplain soils in the OU4 Study Area, respectively. Community-based assessments were conducted based on direct comparison of measured chemical concentrations in environmental media and biota tissues to available health-protective benchmarks and it was concluded that there is a potential for adverse health effects in benthic invertebrates and fish. With the recognition that PCBs are bioaccumulative, population-based assessments were conducted based on predictive food web modeling to evaluate the potential for adverse health effects in a variety of avian and mammalian wildlife species as surrogates for six semi-aquatic and six terrestrial feeding guilds that utilize Bound Brook and the Bound Brook corridor. The selection of the feeding guilds, which included herbivorous, insectivorous, piscivorous, and carnivorous birds and mammals, and surrogate wildlife species, was informed by habitat characterizations conducted by the EPA and Stantec Consulting Services, Inc. (2008). It was concluded that there is a potential for adverse health effects in insectivorous and piscivorous semi-aquatic birds and mammals, semi-aquatic bird eggs, and terrestrial birds and mammals.

Comment #21: An education campaign must be conducted targeting the low-income subsistence fisherman and hunters with a focus on those whose first language is not English and the newly relocated families. EPA must address the uncontrolled consumption of fish from these waters, and coordinate with the health agencies on an outreach plan to those who consume poison fish, game and other wildlife.

EPA Response – In 1997, NJDEP issued an interim fish consumption advisory for Bound Brook and New Market Pond. As part of the OU4 remedy, institutional controls will continue. The fish advisory will be maintained to protect against human exposure in downstream areas of the brook. Further, EPA has posted, and continues to post warning signs in English and Spanish alerting the public not to eat the fish. During EPA’s investigation, an angler survey specifically asked local fisherman whether or not they were keeping and eating fish that they caught. No fisherman claimed to keep or eat the fish. Hunting wildlife in this area is prohibited and is enforced by the local authorities.

Comment #22: All responsible parties must be held accountable.

EPA Response – EPA has investigated all currently known potentially responsible parties and undertaken enforcement actions with respect to identified responsible parties, from 1996 to the present.

Comment #23: Since the DSCA is located at the headwaters of the Bound Brook, it is critical that EPA make sure that the Dismal Swamp Preservation Commission (DSPC) is included as a stakeholder, and the proposed cleanup plan is presented to this state commission.

EPA Response – EPA's OU4 investigation expanded from the Talmadge Bridge (upstream of the DSCA) and extended downstream to the confluence of Bound Brook and Green Brook, which is a 10 mile span. EPA concluded that almost all PCB contamination extended within Bound Brook from the eastern most border of the former CDE facility down to the end of New Market Pond. The DSCA is located upstream of the former facility approximately 1.3 miles. EPA has therefore concluded that the site-related contamination being addressed under OU4 does not impact the Swamp. EPA held a public meeting on October 21, 2014 where the general public had the opportunity to learn about and comment on the proposed remedies for addressing contamination within the Bound Brook corridor. Members of DSPC are believed to have been part of this meeting and subsequent discussions. Going forward, during future site-related public information sessions (as EPA holds these on an as needed basis to update the community of the remediation progress), members of the DSPC along with other public officials and residents are welcome to attend and discuss the site's current and future activities and its impacts on the community.

Comment #24: The EPA's decision to incorporate Woodbrook Road Superfund site section of the Bound Brook into the cleanup for CDE Superfund site OU4 requires the EPA to fully delineate contamination into the Bound Brook. The PCB contamination at CDE was identified to have Aroclor 1254, while CDE stated to have used Aroclor 1242. EPA must fully remediate all sources of contamination leading into the surface waters and sediments of the Bound Brook, as well as its tributaries that pose any risk to human health and the environment.

EPA Response – EPA is addressing the contamination found at Woodbrook Road under a separate Record of Decision. Both Aroclor 1254 and Aroclor 1242 were utilized by CDE. As stated in the OU4 RI Section 1.2.2, "In its November 1996 response to EPA's request for information, CDE provided information that Aroclor 1254 was used in its power factor capacitors and some other capacitors. Based on deposition testimony, CDE also used Aroclor 1242 in the early 1960s in power factor capacitors." Regarding attempts to finely differentiate the two Aroclors via sample analysis, it should be noted that Aroclor 1242 contains a slightly lighter PCB mixture than Aroclor 1254. In the environment, Aroclor 1242 is comparatively more likely to experience degradation and 'weathering' than Aroclor 1254, which can modify its chromatographic pattern. The cleanup goal is 1 mg/kg for total PCBs, not individual PCB Aroclors.

Comment #25: Chevron Ortho Chemical is responsible for on-going releases of pesticides flowing into the nearby surface waters of Bound Brook.

EPA Response – It is recognized that the Chevron/Ortho site is located upstream of the former CDE facility and that surface runoff from this site discharges to an unnamed tributary and culvert, which ultimately discharges into Bound Brook. Surface sediment data along this tributary, however, suggest that gamma-chlordane and dieldrin are not transported to Bound Brook and pesticide-containing solids settle out of the water column prior to reaching Bound Brook. See EPA's RI for further detailed information.

Comment #26: Regarding Vapor Intrusion, EPA has not done enough vapor testing in the plumes homes, schools, businesses and day care centers to know if there may be potential problems similar to the magnitude of vapor intrusion in Pompton Lakes, New Jersey.

EPA Response – Vapor intrusion concerns are being addressed under OU3. EPA has focused on residential properties that are known to be in the areas where TCE contaminated groundwater is shallowest (closer to the surface). Under EPA's current program (which occurs during the winter months), EPA has sampled and sometimes resampled up to 52 properties. To date, no structures have been found to have vapor intrusion. EPA has committed to conduct soil vapor intrusion sampling over the long-term.

Comment #27: There has not been sufficient investigation of potential drinking water wells that are now at risk due to the change in the aquifer system.

EPA Response – Public water is available and in use throughout South Plainfield and the surrounding area. EPA agrees that further efforts to identify private drinking water wells are worthwhile, and supports any efforts that would result in the identification and testing of private wells and prevent exposure to contaminated drinking water. The OU3 remedy selected by EPA incorporates additional efforts to identify wells still in use within the TI zone. Please note that other potential contaminant sources exist within Middlesex County, and that potable well testing may be appropriate for any private well in this area, whether or not the source of identified contamination might be the CDE site.

EPA knows of private wells in South Plainfield but has found none within the TI zone. South Plainfield does not have an ordinance preventing the use of private wells. The State of New Jersey can request that a municipality require connection to a public water supply and a municipality can make that a requirement.

Comment #28: Pumping of groundwater from the Spring Lake Wells to lower the groundwater to below the streambed of the Bound Brook should be implemented to attempt to minimize the existing chemical discharge. EPA must effectively control the groundwater discharge into Bound Brook for at least 200 years.

EPA Response – This was discussed in the FS and Proposed Plan but not carried forward as an alternative. The shutdown of Spring Lake Wells was based on cost considerations associated with removal of high levels of chemicals. For the OU4 remedy, a small pump and treat system that will require 3 wells pumping at a rate of 25 gallons per minute will be needed to capture the contaminated groundwater entering the Bound Brook. The pump and treat system is expected to operate in perpetuity.

Comment #29: In review of the options EPA is considering for controlling active groundwater discharge, the reactive cap on the Bound Brook bottom has the most feasibility.

EPA Response – The reactive cap was considered, however, due to long-term effectiveness and implementability challenges, such as reactive media replacement as well as the difficulty of performing the actual change out without recontamination, EPA selected the hydraulic control (pump and treat system) alternative. Please review EPA’s nine criteria in the Decision Summary for more information.

Comment #30: EPA must revisit their decision to leave the groundwater contaminated due to the new information regarding the groundwater plume. There are several technologies that should be considered to address the CDE groundwater plume and a treatability study must be conducted to assess these technologies to address the seriously contaminated groundwater plume from the CDE site. A field application of passive treatment of chlorinated solvents using novel sustained release oxidant technologies should be reviewed.

EPA Response –In the RI/FS for OU4, EPA identified no new information that would suggest that the 2013 ROD for groundwater should be re-visited. In regard to new technologies as suggested by the commenter, *in-situ* chemical oxidation was considered as a process option in the OU3 Feasibility Study but was screened out due to difficulties in delivery and distribution of the reagent within the rock matrix, the inability of sodium permanganate to treat PCBs, and the need for multiple treatments over many years, with little likelihood of success.

Comment #31: EPA must do some fundamental research on where this PCB toxic dredge (previous dredging of New Market Pond) went.

EPA Response – There was an effort to determine where the dredge spoils ended up, however, these efforts were unable to determine the fate of the dredge spoils from New Market Pond. Anecdotal information indicates that the dredged material was used as daily landfill cover for the Edison Township landfill. As EPA has previously shared with the commenter, surface seeps/drainage ways off of the Edison Township landfill cap were tested by EPA for PCBs. EPA found no evidence of PCBs.

Comment #32: EPA states that they estimate the half-life of PCB to be 50 years. The concept of half-life implies that the PCB is degrading, that it is no longer PCB, that it is fundamentally changing; yet, they explicitly state that the PCB is not degrading. EPA must explain this discrepancy. EPA should not consider Monitored Natural Attenuation (MNA) as a component of any remedial measure for the stream sediments because it is not valid for a contaminant that doesn't degrade.

EPA Response - The use of the term "half-life" in the RI refers to the time required for the surface sediment PCB concentration to reduce to half of the present concentration (a "halving time"), based on the analysis of previously suspended matter in the high resolution sediment core. The decreasing PCB concentration in the upper segments of the New Market Pond high resolution sediment core suggests deposition of relatively less contaminated solids compared to past decades. The reduction of PCB concentrations in upstream suspended solids may be related to a multitude of chemical and physical processes. These processes may include burial and mixing with cleaner solids as a result of EPA's removal action to armor the Bound Brook stream banks adjacent to the former CDE facility to reduce erosion, and the remediation and capping of OU2. Usage of the term "half-life" is generally accepted in contaminated sediment project discussions and does not refer specifically (or solely) to PCB biodegradation, nor does it depend only on the resuspension and transport/redistribution of contaminated sediment as suggested in the comment, given that the high resolution core itself was collected from a location that was continuously depositional. For these reasons, Monitored Natural Recovery (not MNA) is a viable approach and is part of the selected remedy.

Comment #33: The timeframes used for the EPA cost assessments are not valid and standard protocol says that EPA should use a 30-year period for evaluating the present worth cost of the various alternatives.

EPA Response - The estimated costs in the FS alternatives were compared over a 30-year operating life with construction occurring in Year 1 and operation and maintenance (O&M) and periodic costs starting after the completion of construction. For example, for the Sediment and Soil Alternatives, construction costs were assumed to occur over 2½ years, beginning in Year 1. O&M costs (SS-3 only) were assumed to occur annually starting in Year 4 and periodic costs (SS-2 and SS-3) to occur every 5 years starting in Year 8. The ongoing costs were repeated on the same schedule for the 30 year period examined and estimated. Costs for each alternative were converted to a net present value (NPV) using a 7 percent discount rate to allow a comparison of alternatives with different cost schedules.

Typically, costs are presented for a 30-year operating period because costs accruing after 30 years are deeply discounted and do not have a significant impact on the NPV. For example, if the operating periods for the groundwater alternatives were extended to 100 years and the NPV was recalculated for that period, the NPVs would increase, on average, 5 percent (range 4 to 6 percent) for the different alternatives. Extending the operating period did not change the relative costs of the different alternatives evaluated and would not be appropriate under the EPA's requested structure for cost estimates.

Comment #34: Great care must be taken when doing any additional intrusive work in the Bound Brook and Green Brook by EPA. EWA shall provide a 1915 Cultural Resource Report on Bound Brook and requests that special care be given to minimize disturbance of the Bound Brook and recover any prehistoric artifacts.

EPA Response – EPA will be performing a Phase 1A Cultural Resources Survey during the RD to identify prehistoric Native American sites in Bound Brook corridor. EPA would accept any additional useful information to complete the survey.

A representative from the Middlesex Greenway coalition submitted the following comments:

Comment #35: "During the presentation, the EPA showed a map of areas that are contaminated with PCBs and will be remediated, by removing the soil or dredging the Bound Brook. However the EPA did not identify landowners by lot and block of the areas that had to be remediated. A list of landowners should be provided."

EPA Response – EPA's presentation to the general public, included the nature and extent of contamination, health and environmental risks associated with the contamination in various media, identification of all viable alternatives to remediate health risks and EPA's preferred remedy. During EPA's presentation, figures identified the area of approximately 10 miles in the remedial investigation and provided the public with areas requiring a remedy due to contaminated PCB sediment or floodplain soils. When the Record of Decision is approved and released to the public, EPA will start the Remedial Design (RD). The RD will identify those landowners that will need to be contacted for future access. The listing of landowners impacted by the remedy is kept confidential unless the property owner agrees to the release of information.

Comment #36: "It appears that one of the areas to be remediated is owned by Middlesex County Parks Department. This is the area south west of Spring Lake Park, and along the Cedar Brook, and along the north shore of the Bound Brook by the confluence of the two brooks. (See enclosed map)

a. Has Middlesex County Parks Department been notified of this contamination, and have they been requested to give comment to the cleanup plan?"

b. If they have not yet been contacted I am requesting the comment period be extended to allow for their comments.

c. Since this area is contaminated, are there any restrictions on public access/use of the site prior to remediation?"

EPA Response – The Middlesex County Department of Infrastructure Management submitted comments to EPA. There are no current restrictions on public access, however, the NJDEP (along with EPA's assistance) continues to uphold the fish advisory informing the public that while it is acceptable to fish, people are warned to not eat the fish.

Comment #37: The commenter further notes that it was unclear as to how much soil had to be removed from sites, how deep the dredging of the Bound Brook will be, how much clearing of trees and vegetation is needed, and the depths of the soil excavation. The commenter also stated that a survey/inventory of the flora and fauna should be done prior to the work.

EPA Response – The excavation of contaminated floodplain soils will be to an average depth of three feet in most sections. Almost all areas containing Bound Brook contaminated sediments will be dredged down to the bedrock which has been observed to range from a depth of six inches to a foot below ground surface. EPA will survey the areas identified to be disturbed to inventory trees and vegetation. The survey will contain recommendations on whether or not a particular tree or area can be left undisturbed and what will be needed for restoration in areas that will be disturbed. All this information will be determined during the RD. EPA will make every reasonable effort to save trees and preserve the vegetated areas.

Comment #38: The Cedar Brook-Bound Brook corridors were used by Native Americans in the pre-historic era. Artifacts have been found along the brooks. The commenter inquired if the State Geologist has been contacted about Native American sites that might be located in the project area. The commenter also stated that the State Geologist published a list of sites around 1914.

EPA Response – See response to Comment #34. EPA will perform a cultural research study that will include this type of investigation during RD. The cultural resources study conducted by EPA will utilize historical information sources.

Comment #39: There was no discussion of how the natural resources of the project will be restored after the removal work.

EPA Response – All areas will be surveyed prior to remedial action activities. The surveys (which include details of current vegetation and land usage, etc.) will be used by EPA to restore disturbed areas, as close as possible, to pre-work conditions.

Comment #40: This project was discussed at the Middlesex Greenway Coalition (MGC) meeting on October 30, 2014, because the project is in the route of the westward extension of the Middlesex Greenway. The route is shown on the 2003 Middlesex County Open Space and Recreation Plan. The Middlesex Greenway will connect with a greenway along the Cedar Brook in the OU-4 project area. To achieve this planning goal of extending the Middlesex Greenway and connection to a Cedar Brook greenway, the MGC would like to see a multi-use trail constructed after the project is remediated. This trail could be built along the Bound Brook and Cedar Brook and could connect with Spring Lake Park, Veterans Park, and downtown South Plainfield because: such a trail would help mitigate the damage done by the soil removal and dredging; and, this would be consistent with EPA's policies on Smart Growth, which encourages such trails.

EPA Response – EPA plans to engage Middlesex County, the MGC and trustees of natural resources affected by the OU4 remedial action that are interested in restoration, as early as the design stage of the project. EPA's goal is to restore the disturbed areas as close as possible to pre-existing conditions. EPA will engage trustees during the design and remedial action phases of the project to ensure stakeholder input is given consideration.

Comment #41: On the lands that are cleared and remediated, the land should be restored using native plant species since: a management plan for the lands should be funded and created to guide future maintenance of the lands; and, the EPA should fund 5 years of maintenance of the lands by a competent natural lands entity following the management plan. This will ensure the survivability of plants and trees. Otherwise invasive non-native species will overrun the lands.

EPA Response – See response to previous comments #37 and #39. EPA will restore disturbed areas as close as possible to pre-existing conditions. EPA will develop and use a restoration management plan that provides a framework for restoration activities including monitoring of planted areas, and re-planting, where necessary, based upon plant survival rates. It is anticipated that such a restoration management plan would provide vegetation monitoring for 5 years.

A representative, on behalf of the South Plainfield Environmental Commission, submitted the following comments on the Proposed Plan:

Comment #42: The Commission believes that Alternative GW-3, to pump and treat groundwater to prevent it from discharging into the Bound Brook, is the most practical of the three proposals. EPA should continue to periodically review the status of groundwater remediation in the Brunswick shale bedrock, as new technologies that would allow actual remediation of the site may become available in the future.

EPA Response - Comment noted. EPA agrees that Alternative GW-3 provides the best solution to a complex contaminated groundwater problem within Bound Brook.

Comment #43: The Commission acknowledges the need to disrupt the existing plant and animal communities in the Brook and along the stream corridor in order to remove contaminated sediment and soil, but regrets their loss. A survey of existing conditions should be made prior to dredging. Restoration plans should include existing native plants where practicable. The Environmental Commission would like the opportunity to review and comment on restoration plans when they are developed.

EPA Response - As part of remedial design, EPA will survey the land to note existing natural cover/vegetation and the wildlife habitat with the intent to restore all areas expected to be remediated. These areas will be restored as closely as practicable to previous conditions. Also, EPA will consult the Environmental Commission prior to and during all restoration activities.

Comment #44: The Commission has previously provided information about historical and cultural resources in connection with the site. Associate Member Larry Randolph worked with Eugene Boesch, the principal investigator for the Spicer project. In 2012, they walked the stream corridor from the Spicer site to the junction of the Bound Brook with the Green Brook behind Middlesex High School. At that time the Corps was unsure of exactly where they would be digging, so they noted all sites that were present in the floodplain. This included both historic and prehistoric sites. In addition, the area has been surveyed for the Green Brook Flood Control Project and previous work had been done by State Geologist in 1913. Prehistoric sites mostly are located on the terraces adjacent to the floodplain and not on the plain itself. The locations of these sites should be identified before design work begins, so that the plans, including planned access routes into the flood plain, can take them into account and avoid as many as possible.

EPA Response – During remedial design, EPA will perform a cultural survey that includes a thorough review of all available historic and prehistoric information prior to any disruption to the areas determined to be remediated. EPA will reach out to the Commission for assistance when the survey is being planned.

The following comments were offered by the County of Middlesex – Department of Infrastructure Management:

Comment #45: General – Restoration. We (the County of Middlesex) would appreciate an evaluation of the potential impact of the preferred remedial actions on continued plans for such recreational uses, specifically:

- Green Acres Program Requirements: If any restoration activities are conducted on County Parkland, it should be in accordance with Green Acres regulations, particularly the removal of vegetation and soils.

- Public Access: We would request an evaluation of included increased public access along the Bound Brook with the restoration area.
- Monitoring and Documentation of Vegetative Restoration Areas Disturbed by Remedial Actions: We recommend the length of monitoring for confirmed establishment of the restoration vegetation to be between 5 to 10 years, understanding that replanting may be required to achieve the minimum accepted levels of survival and area coverage. In that time, recovery should be measured and documented bi-annually. We would require documentation that the restoration sites have an 85 percent survival and 85 percent area coverage of the restoration plantings or target hydrophytes which are species native to the area and similar to ones identified on the restoration planting plan to be developed for the project. The restoration plan should also include the ability to provide additional plantings should the sites fail to meet the indices for success. Monitoring must document that all plant species are healthy and thriving and, if the proposed plant community contains trees, demonstrate that the trees are at least five feet in height. Likewise, the sites should exhibit substantial species diversity.

We would also require monitoring, action and documentation to minimize the establishment of invasive species to determine that the site is less than 10% occupied by invasive or noxious species as identified the New Jersey Invasive Species Council.

We are concerned that the measures proposed, which rely on Monitored Natural Recovery (MNR) for contamination reductions, conservatively would reduce contamination in fish tissue to a protective level after 100 years. While expressed as a “reasonable timeframe” in EPA documents, this seems to be an overly long time for sustained monitoring to determine exactly when fish advisories can be lifted for the watercourse. In the interest of making the strongest effort to preserve these areas for recreational use and a healthy habitat for native biota, we would support modifications of the remediation measures that would include accelerated reduction of contaminants to achieve protective levels in fish tissue to allow sustenance fishing in a much shorter timeframe than the 100 years implied.

EPA Response - During the remedial design process, EPA will review Middlesex County’s Greenway plans along with other local activities that will impact the long-term use of the Bound Brook corridor (e.g., USACE Flood Control projects). Consideration will be given to the site setting and uses in the selection of backfill materials, plantings, invasive species control and care/monitoring of vegetation after planting. Following remedial construction, the brook and floodplain will be returned to its preconstruction condition to the extent possible and consistent with applicable State laws. As noted in Comment #41 above, EPA will also utilize a restoration management plan that includes the monitoring of planted areas, and re-planting, for 5 years.

The ability to remove or relax fish advisories is dependent on a number of variables, only some of which can be addressed through active remediation. The proposed remediation program for OU4 is expected to result in fish tissue concentrations of PCBs that allow for fish consumption within a reasonable time which was conservatively estimated as 100 years. Following active remediation, fish will be monitored to evaluate the decrease of contaminant concentrations and determine when fish advisories can be safely adjusted and/or released.

Comment #46: Sediment and Floodplain Soils. Because SS-2 action represents the most comprehensive remediation by full removal of actual contaminants with the minimum reliance on MNR we are in agreement that it appears to be the best course of action. We agree that cap alternatives are not appropriate as they are too restrictive in light of future uses and anticipated flood control measures and potential stream modification work in the Bound Brook as part of the Green Brook Flood Control Commission activities.

We are concerned that the restoration of excavated and disturbed areas of the Bound Brook corridor be performed with measures and materials that most reflect the desired natural conditions of an uncontaminated stream. We strongly encourage that restoration in low lying, floodplain and overbank areas and within the stream channel utilize clean soils that can support the native species that are to be planted and humans and animal species that will utilize the open space areas. Clarification of the restoration of excavated areas related to establishment of native plants is appreciated.

We strongly recommend careful adherence to use of natives and ecologically appropriate plant species, especially the use of local genotypes as an integral component of the restoration activities. Wherever possible, the county would appreciate stable vegetated banks over riprap armoring techniques. Where it is appropriate to withstand erosive flows, we would encourage “green infrastructure” armoring that would combine engineered stabilization with appropriate bank plantings.

EPA Response – Comment noted. See response to comment #37 above. Site restoration design will consider appropriate backfill and plantings, control of invasive species during restoration and will include monitoring for re-establishment of plantings. The use of native plantings in lieu of riprap armoring will be implemented where suitable.

Comment #47: Sediment and Floodplain Soils. The option to excavate stream bed soils by first dewatering segments to be excavated is preferred by the County, as alternative dredging is most likely to present risks of more migration of contaminants to downstream areas.

EPA Response – Comment noted.

Comment #48: Hydraulic Control of Groundwater. The commitment to regular upkeep of the hydraulic containment system of wells for groundwater extraction and a water treatment facility cannot be underestimated, as this operational measure may be necessary for many decades or even centuries, i.e., as long as contaminants within the bedrock matrix would prevent groundwater from meeting remedial action objectives in Bound Brook.

EPA Response – Comment noted.

C**omment #49: Capacitor Debris.** Because the CD-4 action represents the most comprehensive remediation by full removal of actual contaminants with the minimum reliance on MNR we are in agreement that it appears to be the best course of action.

EPA Response – Comment noted.

A resident from the nearby Town of Metuchen wrote the following comments:

Comment #50: I support your choices for the Operable Unit 4 remediation, including pumping and treating the contaminated groundwater to prevent its re-contaminating the sediments of the Bound Brook, and dredging or excavating the contaminated sediments that are already there. I am particularly glad that you will remove the worst contamination for the full length of the Bound Brook downstream from the site.

EPA Response – Comment noted.

Comment #51: I also am glad that you will control the flow of contaminated groundwater toward the Park Avenue wells of the Middlesex Water Company. Middlesex Water Company provides water to Metuchen, where my family and I live. I have no reason to doubt that the water company is doing a decent job treating the water as required by potable water regulations. But I also have no doubt that the resulting water will be cleaner, and the treatment process may be a bit less expensive, if contaminated groundwater does not reach the wells in the first place. I do not like the idea that our potable water treatment system is the first line of defense against polluted groundwater.

EPA Response - The pumping component objective for the OU4 groundwater remedy is to prevent contaminant discharge into Bound Brook and not to control groundwater flow at the Park Avenue wells. Middlesex Water Company provides treatment at their wellheads. Treatment at the wellheads is monitored and reported on a frequent basis to ensure the water supplied to consumers is within acceptable limits. EPA gave consideration to a number of groundwater remediation alternatives in OU3 and determined that area-wide groundwater remediation was technically impracticable.

Comment #52: "The eastern fork of the Bound Brook starts here in Metuchen, about three miles upstream of the CDE site. My family and friends and I enjoy the outdoor activities that we can access without having to drive. The Middlesex Greenway rail trail has been a great amenity for area residents to enjoy. We are excited that Middlesex County may extend the Middlesex Greenway to the Dismal Swamp. Meanwhile, the County has been investigating the purchase of 12+ acres in the southeast comer of the Dismal Swamp (which is the northwest comer of Metuchen). Together, they will create a publicly accessible trail and wooded wetlands area that will make a great park. The timing is great as well, since that area of the borough is undergoing redevelopment.

"I suggest that the EPA coordinate with Middlesex County, the N.J. [NJDEP] and the [USACE] to clean and restore the entire length of the Bound Brook, including the eight miles downstream of the CDE site and the three or so miles upstream. I realize that each agency has its particular focus, be it cleaning up a certain site, reducing flooding or restoring the stream and wetlands after remediating each site. But it would be a pity if a fragmented approach due to differing agency priorities should miss out on a tremendous opportunity to reverse over 100 years of abuse of the Bound Brook and Dismal Swamp.

“I am sure that collectively the agencies can find synergies in their respective areas of expertise to make the most of this opportunity. For example, the EPA proposes excavating soil with high levels of PCBs and buried capacitors. Perhaps some of these excavated areas could be left, at a lower elevation and not filled back in, in order to increase the capacity of the Bound Brook corridor to hold storm water and to re-create wetlands. The groundwater that EPA pumps up from the site and treats should be discharged back into the Bound Brook. Clean water is a valuable resource, especially when we have a long dry spell and the water level in the Bound Brook drops very low. It would be nice if the water could be discharged as far upstream of the CDE site as possible, where it may be useful in helping to restore wetlands on the Woodbrook Road dump site and beyond. No reason to waste the treated water and spend the money to discharge it to already overloaded public sewage treatment works.”

EPA Response – EPA has met and will continue to meet with representatives of Middlesex County, the NJDEP and the USACE to consult and inform them of our plans. EPA agrees that implementation of a project that jointly addresses the needs of multiple stakeholders may have the potential for a better overall outcome than the various parties acting independently.

EPA will consider the suggestion to have collected and treated groundwater transported some distance away, such as to the Dismal Swamp area, in the remedial design; however, EPA only has the statutory authority to use CERCLA funds to address problems associated with the site. If the best solution for the discharge of treated water were at some location different than near the treatment point, and the costs were the same, EPA could consider it.

Comment #53: I also suggest that the EPA and its fellow agencies take steps to restore fish passage up the Bound Brook. Like many rivers and streams, before the mill dams completely blocked the width of the Bound Brook, fish would have been able to swim up into the Dismal Swamp and elsewhere along the Brook to spawn. Those mills are long gone. I suggest either breaching the dams or adding fish passage structures to facilitate the return of fish to the entire Bound Brook. If the sediments and water have been cleaned up, why not? And while you're at it, how about seeing if it's possible to arrange passage along the entire Bound Brook for kayaks and canoes, with portage points at any dams that remain?

EPA Response – Under CERCLA (the Superfund law) EPA’s mission is to address the contamination within Bound Brook. Specifically, EPA’s

Superfund efforts are to address unacceptable health and environmental risks from hazardous substances that, in this case, affect the Bound Brook. EPA is not the decision-maker with regard to whether the commenter's suggestion of creating portage points is the right one for the Bound Brook – that would be a decision for NJDEP in consultation with the counties and municipalities involved. EPA will be in discussions with these parties during remedial design and construction, at which time opportunities to make changes in the Bound Brook stream corridor, such as those suggested by the commenter, can be considered.

Several community members (66 in total), which included fishermen, parents, bird watchers, recreationalists and nearby residents, submitted the following concerns:

Comment #54: As members of the community, we suggest complete removal of all PCB in Bound Brook and stop the groundwater from entering Bound Brook. Also, EPA must properly clean New Market Pond, address the fish consumption, work with health agencies to educate the low income population who eat the fish and work to fully restore the Bound Brook. In addition, EPA must work with NJDEP, the US Fish and Wildlife Service and US Army Corp. of Engineers on the clean-up.

EPA Response – PCB-related sediment and floodplain soils above 1 mg/kg will be removed from the Bound Brook Corridor, which includes New Market Pond. The PCBs remaining at levels below 1 mg/kg in sediment and floodplain soil will be addressed by monitored natural recovery. The site-related contaminated groundwater along the boundary of the Bound Brook and the former CDE facility will be captured prior to reaching the Brook through the use of hydraulic containment. EPA continues to inspect the known contaminated areas where fishing is favored to ensure the appropriate signage has been installed. These signs inform/alert the fisherman of the NJDEP's fish advisory (informing the public of catch and release only, and not to eat the fish) throughout the Bound Brook corridor. Prior to undertaking the cleanup action, EPA plans on alerting and working with, as needed, the NJDEP, federal natural resources trustees such as the US Fish and Wildlife Service, and the USACE, as the commenters have suggested.

Comment #55: The community would like to know if we are being exposed to TCE and PCE through Vapor Intrusion.

EPA Response – See comment #26 above.

Comment #56: Since New Market Pond has been dredged several times over the last 100 years, EPA needs to perform fundamental research on how the dredging spoils were used.

EPA Response – EPA has investigated this issue but has not found evidence concerning the location of the dredged sediment.

Comment #57: The community members that hunt, fish, hike, and bird watch within the Bound Brook corridor would like to see the area cleaned and restored so that the local habitat and wildlife can thrive and recover, which also will allow them to continue to use the area.

EPA Response – EPA shares this goal. See comment #37 above.

Comment #58: When the Middlesex Water Company shut the wells down at Spring Lake, water levels in the groundwater rose from several hundred feet down to the surface and now discharges into the Bound Brook as well as other potential areas which have not been determined.

EPA Response – See response to verbal comment #4, below. EPA measured a change in water level of about 5 feet, in EPA-installed shallow monitoring wells near the site. While not an insignificant amount, it is not several hundred feet of change.

Comment #59: EPA needs to reopen the groundwater cleanup decision and come up with a way to treat the groundwater at the site and also capture it from entering the Bound Brook.

EPA Response – Since the time that the OU3 ROD was issued (September 2013), the conditions within the groundwater plume have not changed. All previous and current groundwater chemistry data obtained through EPA’s monitoring program have indicated a stable plume, with similar results prior to the 2013 ROD. At this time, while EPA is monitoring the plume for changes, there is no reason to revisit the cleanup decision.

Comment #60: EPA must also quantify the impact of the PCBs and other chemicals within New Market Pond and around the entire park.

EPA Response – EPA has quantified the impacts to New Market Pond. Please see the 2014 OU4 RI Report for further details. New Market Pond is included in the remedy and will undergo dredging to remove the PCB-contaminated sediments.

Comment #61: EPA’s investigation of the surface water in the up-gradient areas in the Dismal Swamp and its tributaries show that there are ongoing discharges of chemicals still occurring that are impacting surface water and sediment in Bound Brook.

EPA Response – As part of the OU4 RI, EPA reviewed the upstream areas of the Bound Brook and found no chemicals impacting the Bound Brook that are causing unacceptable risks to human health or the environment. See the 2014 OU4 RI report for further discussion and results of these upstream areas.

Comment #62: EPA must explain why the fish in Spring Lake are contaminated with PCBs when water from Spring Lake flows only into Bound Brook.

EPA Response – Sampling results of Spring Lake surface water and sediments do not indicate the presence of PCBs. There are no known PCB sources associated with the CDE site upstream of Spring Lake and there appears to be no conduit that would allow fish to reach Spring Lake from the downstream Cedar Brook location. Still, the most likely local PCB source that a Spring Lake-caught fish could be exposed to is in Bound Brook; however, EPA acknowledges that it cannot explain how the fish got there, except through human intervention (catch/release). The response actions identified and selected in this Record of Decision will address sources of PCBs associated with the CDE site. Additional investigation of suspected sources of contaminants not related to the CDE Superfund site will be referred to NJDEP.

Part II. Verbal Comments from the Public Meeting held on October 21, 2014

A summary of the comments and questions from the public meeting transcript can be found below. The original transcript is an attachment to this Responsiveness Summary.

Verbal #1: A stakeholder representative commented on the following - The EPA's decision to include some limited groundwater treatment at the site is welcome news. According to EPA's own documents

(March 6, 2014 stakeholder comments), it says the 825-acre plume is hydrogeologically connected to Spring Lake, Cedar Brook, and Bound Brook. Does EPA know any other areas where this plume is hydrogeologically connected or discharging in any of the residential community that's above the plume?

Response: EPA's groundwater sampling results and modelling has determined that site-related contaminants are discharging into the Bound Brook. The area of the discharge is along a 1,600-foot stretch of the brook near the site.

Verbal #2: The same person asked if the contaminated groundwater plume is discharging to Spring Lake and to Cedar Brook, and if is it known where the entire plume is.

Response: Cornell-Dubilier used a solvent called trichloroethylene (TCE) and it is the main contaminant found within the 825-acre plume, in addition to its breakdown products. As described in the September 2012 OU3 ROD, EPA concluded that there was no mechanism to restore that water. The results of monitoring wells located near Spring Lake suggest that TCE is probably discharging into Spring Lake at relatively low levels, but at concentrations that are not detectable. No PCBs have been detected in those wells or in Spring Lake. The OU3 ROD clearly identifies the location of the entire plume.

Verbal #3: A follow-up comment stated that EPA had made its decision about the groundwater based upon information not entirely understood by EPA at the time of the OU3 ROD. At the time of the OU3 Proposed Plan, EPA had stated that the Bound Brook was not being influenced by the groundwater. It was only after the insistence of outside groups (including the commenter) that EPA check the brook, that EPA found that the contaminated groundwater plume wasn't several hundred feet below ground surface (EPA's assumption for OU3) but, in fact, could be connected to the brook anywhere up to a depth of 120 feet below ground surface.

Response: This statement is not factually correct. The Proposed Plan and the OU3 ROD discussed the fact that groundwater entered the surface water near the CDE facility. These documents identify one area of uncertainty: whether contaminated groundwater was discharging to Bound Brook at levels that would pose an unacceptable risk. EPA explained in the OU3 ROD that a further study would be needed to answer these questions. The question of how far and to what degree was contaminated groundwater getting into the brook, and whether it posed an ongoing source of contamination, framed the investigation. It was subsequently found that there is a stretch of about 1,600 feet of the brook, starting at just east of the CDE facility and progressing downstream, where groundwater contaminated with both TCE and PCBs discharges to surface water. Therefore, to remediate the brook sediments and decrease levels of PCBs in fish, a groundwater remedy is being selected to eliminate the source of PCBs entering Bound Brook.

Verbal #4: A stakeholder commented that EPA does not know where the 825-acre plume is going and that EPA’s decision to invoke a technical practicability (TI) waiver for groundwater be revisited. The commenter also claimed that the Middlesex County Water Company caused the regional groundwater problem and should be held accountable.

Response: EPA’s investigation of the plume indicated it is not expanding and there is no additional information available that would suggest that this conclusion should be revisited. EPA continues to implement the TI waiver and monitoring activities. Middlesex County Water Company’s decision to close down their well field was a business decision that EPA was not a part of. EPA is addressing the effects on the Bound Brook from the released PCB contamination from the former CDE facility identified under OU4. Whether EPA might take enforcement action against a municipal water supply for influencing the movement of groundwater through the pumping action of its water supply is beyond the scope/not relevant to the process of selecting a remedy for OU4.

Verbal #5: A South Plainfield resident asked if there are plans for another Community Action Group (CAG). The commenter also was concerned that the CDE facility continues to leach contamination into the brook and may continue to do so even after the brook has been cleaned up.

Response: A CAG is typically formed for a Superfund site during the investigation and remedy selection phase, to aid the community in understanding the sometimes complex studies and decisions that need to be made. Because this is the last remedy planned for the site, EPA does not expect a CAG to be formed. Be that as it may, there are still many years of work to do at the site, and EPA would assist in the formation of a local citizens group if there is interest to do so.

The capacitor debris area could arguably be considered part of the former CDE facility. EPA could not address it as part of the OU2 remedy because the diversion of the brook is required to allow for the removal of this material. After that part of the OU4 remedy is performed, there is no reason to expect contamination to leach into the brook from the CDE facility, except for the groundwater. Groundwater discharges to the stream are, therefore, another component of the OU4 remedy.

Verbal #6: The commenter stated that he worked for Kentile and that they dumped material and contaminated liquids onto the soil including TCE. He asked if there are other companies that are continuing this practice today And whether EPA has looked into which contaminant (PCBs or TCE) is the more dominant problem?

Response: The dominant concern for OU4 is the PCBs. Although there is a large amount of TCE in the groundwater, and VOC transport to surface water is also occurring (primarily *cis*-1,2-dichloroethylene, a degradation byproduct of TCE), the VOCs may mobilize the PCBs, and it is the PCBs, and not the VOCs themselves, that are the primary concern of this component of the remedy. PCBs do not evaporate and remain in the sediments and eventually into the fish remaining within the food chain for much longer periods.

During both the OU3 and OU4 investigations, EPA looked for other sources and other potential contributors to groundwater and Bound Brook contamination. While other issues were identified in this part of Middlesex County, the 800-acre plume of groundwater contaminated with TCE is from the CDE facility. No other secondary source was found in the direction of the location of Kentile, nor was any other facility identified that might be contributing to the groundwater.

Verbal #7: A South Plainfield resident asked whether EPA had screened out potential remedies that use innovative technologies, like bacterial remediation, and speculated whether there were prior arrangements to use certain technologies and/or contractors. In addition, the resident expressed concern with the fate of a 100-year-old elm tree, along with other older trees, and asked that EPA entertain alternatives that would not destroy wetland/forest. Also, he was concerned about the possibility of restoring the land by paving it, similar to the CDE facility (which is entirely paved). The Bound Brook corridor is home to a wide variety of species, including the Eastern Box Tortoise, and various species of birds that require foliage/trees.

Response: There are some cases where biological treatment methods (using bacteria that break down contaminants in the environment) have been found to be effective with PCBs. Potential technologies, including biological treatment, were screened during the remedy selection process. It was screened out as an *ex-situ* treatment for reasons explained in the Feasibility Study. EPA does not preselect specific contractors or specific technologies for remediation at a site in the remedy selection phase. Remedial action contractors are selected through a competitive process after the remedial design of the selected remedy is completed.

At the end of the cleanup, the wetlands and floodplains will be restored to an ecosystem similar to the one that currently exists. A survey will be completed prior to remediation work to catalogue the habitat for future restoration and retain as many trees as possible. There are no plans to use paving as a component of this restoration effort.

Verbal #8: A resident expressed concern about the lack of warning signs posted throughout the watershed. The resident noted that she had not seen any signs and was concerned that the people fishing and children playing there, since they do not speak English, don't understand the fish advisory. Also, the resident suggested a more permanent way to secure the signage and recommended international symbols be used on the signs to more effectively communicate the advisory to as many non-English speaking individuals as possible. The resident also expressed concern about fishing derbies held in New Market Pond.

Response: Some of the fish advisory signs posted in and around the Brook have been removed by unauthorized individuals and have been replaced by EPA. All signs posted are in English and Spanish, and EPA will consider the use of international symbols for future signs. EPA investigated if fishing derbies were held on New Market Pond and found that there have not been any such derbies at New Market Pond.

Verbal #9: A resident asked whether there are any recommendations for areas that people should avoid or if local businesses and people should do things differently to stay safe? In addition, during the remedial process in the coming years, what's the best resource people can use to stay connected with this progress and obtain all available information?

Response: The most important step for people to take is to observe the posted fish advisories which warn that people should not eat fish from Bound Brook and its tributaries. As part of the OU1 remedial action, EPA has taken response measures to address unacceptable risks on residential properties. To evaluate risk of exposure to the floodplain soils, EPA developed a site-specific "resident-parklands" land use, which identifies conservative and representative land use for exposure to the floodplain. Based upon the risk assessments conducted for OU4, there is no indication of unacceptable health risk in the near term to people who walk their dogs along the Bound Brook or recreate in any of the nearby parks. Other than trespassers in the areas immediately adjacent to the former CDE facility, where very high levels of contamination are present, there are no areas of immediate concern.

During the remedial process, the cleanup will be conducted in phases, due to the large scope and complexity of the various components of the remedy. The community will be notified prior to EPA commencing work at each phase. EPA will post frequent updates on the EPA Region 2 website and notifying those people who are on EPA’s mailing list for the CDE site.

Verbal #10: A resident requested that the Middlesex Water Company reactivate their well field to lower the groundwater table and also asked if the EPA was pursuing this idea.

Response: The Middlesex Water Company shut down the Spring Lake well field for economic considerations that probably included the cost of treatment of chemicals present in groundwater. The Middlesex Water Company is using other well fields nearby and does not currently require water from the wells around Spring Lake. EPA is not requesting that Middlesex Water Company reactivate these wells to lower the water table. For the OU4 remedy, a small pump and treat system utilizing 3 wells pumping at a rate of 25 gallons per minute can capture contaminated groundwater entering the Bound Brook.

Verbal #11: A resident asked if reactivating the wells at Spring Lake would lower the water table enough to stop the discharge to Spring Lake and Cedar Brook and reduce any threat that groundwater may pose to residents in nearby homes.

Response: It has been determined that reactivating the pumping would not effectively restore the aquifer. Continuous pumping (for hundreds of years) would not remediate the contamination. Groundwater modeling has shown that pumping as little as 25 gallons per minute through the use of a small number of wells near the brook would lower the water table in the areas discharging contaminated water into the Bound Brook thereby preventing all site-related contaminated groundwater from entering the brook which is one of the goals of this remedy.

Verbal #12: A stakeholder representative asked whether the primary contaminant in the large plume was TCE or PCBs and if it is TCE, would it leave open the long-term possibility of recontamination.

Response: The primary contaminant in the large plume is TCE and its breakdown products. Monitoring wells located north of the Bound Brook have not detected PCBs in the groundwater. Monitoring wells located near the Bound Brook on the CDE property have detected PCBs.

During the OU3 RI/FS, EPA evaluated whether it is possible to clean the groundwater of site-related contaminants and concluded that it is beyond the capacity of the technologies available today. Therefore, to address this problem, a pumping/capturing system will be implemented to prevent discharge to the brook. This system will need to operate in perpetuity.

Verbal #13: A resident of South Plainfield asked if lowering the water table would possibly dry out private wells?

Response: EPA is not aware of any private wells in the vicinity of the shallow groundwater zone to be addressed by this action. EPA's preliminary groundwater pumping model suggests pumping 25 gallons per minute with three wells to capture the contaminated groundwater from the site along 1,600 feet of Bound Brook would have no measurable effect on private wells in the surrounding area.

Verbal #14: A resident asked when the dredging of the Bound Brook will begin?

Response: It is anticipated that the remedy will be implemented in the following order: installation of the groundwater extraction and treatment system, relocation of the waterline, removal of capacitors next to the facility, and finally, removal of contaminated sediments from the Bound Brook. All of these actions require a detailed design be conducted first. Then, EPA has to secure funding for these remedial actions. Therefore it is uncertain as to when actual construction will begin but it will at least be several years away.

Verbal #15: Some residents asked if EPA will work with FEMA to change the floodplain maps. Residents also asked if additional groundwater pumping in the flood-prone areas would benefit the people living there.

Response: Although it is EPA's goal to restore areas disturbed by remediation to as close to original conditions as possible, an increase in flood storage capacity may be a secondary, beneficial result in restored areas. Information regarding changes in elevation will be made available to FEMA. Additional groundwater pumping in the flood prone areas would not prevent large flooding events.

Verbal #16: A resident commented that the wildlife and biota in the area might be affected by the remediation process and asked about the nature of restoration and whether there would be any effort made to preserve mature trees. The resident also asked if there is a potential for recontamination of a remediated area by other areas that are to be remediated later in the schedule. The resident also asked if contamination from other sites such as Chevron and Woodbrook would affect remediation and restoration efforts in the Bound Brook and its floodplains.

Response. Areas disturbed by the remediation of the Bound Brook and its floodplains will be restored as close to original conditions as is practicable. EPA will seek ways to preserve mature trees; however, some mature trees may have to be removed if they are located within contaminated areas. The remediated areas will be revegetated with non-invasive species and monitored to ensure their establishment. EPA will design the phasing of the remediation work to minimize the risk of recontamination. As mentioned previously, the Chevron and Woodbrook sites do not adversely impact the areas to be remediated.

Verbal #17: A resident asked if the TCE plume will eventually affect the wells up in the Park Avenue/Cedar Brook area to the point that they have to close those wells down?

Response: During the OU3 investigation, EPA found that the most-distant monitoring well installed has elevated VOC levels. That well is within the zone of influence of the Park Avenue well field, but because there are other sources of the same VOCs within the aquifer, it is difficult to distinguish VOCs that might be coming from the CDE plume or from some other nearby source.

Also note that the Middlesex Water Company already treats the water from the Park Avenue well field.

Verbal #18: A resident asked if remediation will be occurring near his residence and if there was any possibility that residences in the area could have been consuming some level of contamination throughout the past years while using well water?

Response: EPA will conduct the remediation in a manner that allows people to remain safely in their nearby homes and businesses.

Some private wells were closed by NJDEP in the mid-1990s due to a TCE source. It is still unknown if CDE was the source of TCE found in those wells, which are several blocks west and south of the facility. It is not possible for EPA or a state health agency to extrapolate previous exposures to residences from prior years.

Verbal #19: A question was asked if EPA has done any air monitoring for levels of TCE being volatilized by the groundwater discharge into Bound Brook? The commenter also requested that EPA interact with the community to minimize impact of the remediation on the community.

Response: EPA has not taken direct measurements of the TCE volatilizing off the surface water, however, modeled concentrations of volatiles in ambient air from volatiles in the surface water did not indicate an unacceptable risk to recreational users. EPA will continue to alert the community of the remedy progress and its potential impacts within the community.

Verbal #20: One commenter asked if it is possible for workers to become desensitized to the odor of chemicals in the brook from such a long time without any respirators or masks. Wouldn't it be prudent to understand the mechanism for TCE evaporation and how much that's generating by way of exposure?

Response: Air monitoring will be conducted in the areas under remediation to ensure the safety of workers and the community. It is not anticipated that the levels of volatilization from surface water would result in the need for air respirators, however a trigger level will be established for the presence of volatiles in air, and if exceeded, the use of air respirators will be required to ensure worker safety.

Verbal #21: A resident asked how risk factors associated with PCB exposure affect health.

Response: Risk factors were considered in the human health risk assessment. The OU4 risk assessment evaluated the cancer risk and non-cancer health effects from exposure to PCBs in soil and sediment, and in fish tissue. The amount of risk is related to the duration and extent of exposure, and differs for different categories of activity. The risk assessment found cancer risk and non-cancer health hazards to people eating fish and shellfish contaminated with PCBs.

Direct contact with PCB-contaminated soil and sediment in areas closest to the former CDE facility may also lead to unacceptable levels of risk. This assessment assumes a person lives on a property and accesses contaminated material 350 days a year for 30 years. It assumes that a child would ingest 200 milligrams of soil, and an adult, 100 milligrams.

Verbal #22: A resident commented that it will take many years to complete the remediation and asked if contamination will expand outside the scope of the estimated remedial boundaries during the long-term remediation.

Response: Data indicate that New Market Pond has acted as a sediment trap, limiting the amount of contaminated sediment from progressing further downstream; it is not anticipated that this condition will change.

Verbal #23: A commenter asked if consuming garden-grown vegetables in contaminated areas poses a health risk. The commenter also asked if vapor intrusion testing was conducted in places of mass gatherings, such as the high school.

Response: As part of the OU1 remedial action, numerous residential and other properties were sampled for PCBs, and, if unacceptable risk was identified, a cleanup was performed, including in some instances at properties with vegetable gardens.

EPA has focused vapor intrusion testing in the areas where the TCE contaminated groundwater is shallowest and vapor intrusion is most likely to occur. EPA has sampled and, in some cases, resampled up to 52 properties located above shallow groundwater containing relatively higher levels of contaminants. No vapor intrusion has been detected in the 52 structures tested. As part of the OU3 remedy EPA will continue to conduct soil vapor intrusion sampling.

Attachment A
Proposed Plan

Superfund Program
Proposed Plan

U.S Environmental Protection Agency
Region 2

Cornell-Dubilier Electronics Superfund Site

South Plainfield, New Jersey

September 2014

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the preferred alternatives to address the contaminated sediments, floodplain soils and groundwater within the Bound Brook corridor as Operable Unit 4 of the Cornell-Dubilier Electronics (CDE) Superfund site.

This Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA), in partnership with the New Jersey Department of Environmental Protection (NJDEP). EPA is issuing the Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of the contamination in the Bound Brook corridor and the remedial alternatives summarized in this Proposed Plan are described in greater detail in two documents: the *Remedial Investigation Report* and the *Feasibility Study Report for Operable Unit 4: Bound Brook*. These and other documents are part of the publicly-available administrative record file. EPA encourages the public to review these documents to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted at the site.

EPA in consultation with NJDEP will select a final remedy for each medium identified (contaminated sediments, floodplain soils, and groundwater) after reviewing and considering all information submitted during the 45-day public comment period. EPA, in consultation with NJDEP, may modify the Preferred Alternatives per media or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented within this Proposed Plan.

MARK YOUR CALENDARS

Public Comment Period
September 30, 2014 to November 14, 2014
EPA will accept written comments on the Proposed Plan during the public comment period.

Public Meeting
October 21, 2014 at 7:00 P.M.
EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at the South Plainfield Senior Center located at 90 Maple Avenue, South Plainfield, New Jersey.

For more information, see the Administrative Record at the following locations:

EPA Records Center, Region 2
290 Broadway, 18th Floor
New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday – 9 A.M. to 5 P.M.

South Plainfield Public Library
2484 Plainfield Avenue
South Plainfield, New Jersey 07080
(908) 754-7885
Please refer to website for hours:
http://www.southplainfield.lib.nj.us/

EPA's preferred remedy includes excavation of floodplain soils and Bound Brook sediments containing polychlorinated biphenyls (PCBs) with off-site transportation and disposal. This action would include the excavation of an area adjacent to the former CDE facility where buried PCB-contaminated capacitors are present. EPA's preferred remedy also would address contaminated groundwater that discharges to Bound Brook, through hydraulic containment. Finally, EPA's preferred remedy would relocate a 36-inch

712130

waterline that traverses the former CDE facility in order to protect the integrity of the facility remedy and future remedies implemented in Bound Brook. In a 2012 Record of Decision (ROD) to address the site groundwater contamination, EPA evaluated alternatives for restoration of groundwater to meet Applicable or Relevant and Appropriate Requirements (ARARs) and concluded that no practicable alternatives could be implemented. (The selected remedy for groundwater relies primarily on institutional controls and long-term groundwater monitoring to prevent use of untreated groundwater as a source of drinking water.) Consequently, as part of the 2012 ROD, EPA invoked an ARAR waiver for the groundwater at the site due to technical impracticability (TI). The 2012 ROD deferred a TI determination for a small area of the groundwater plume that discharges contaminated groundwater to Bound Brook, because that part of the groundwater plume would be evaluated further as part of the remedy selection process for Bound Brook (this action). In addition to the groundwater action that is a component of EPA's preferred remedy presented in this Proposed Plan, EPA has also concluded that the groundwater ARAR waiver should be expanded to include the area deferred in the 2012 ROD, due to the technical impracticability of restoration of this groundwater.

SITE DESCRIPTION

Cornell-Dubilier Electronics, Inc., operated a facility at 333 Hamilton Boulevard, South Plainfield, New Jersey (former CDE facility), from 1936 to 1962, manufacturing electronic parts and components including capacitors. During site operations, the company released/buried material contaminated with PCBs and chlorinated volatile organic compounds (VOCs), primarily trichloroethylene (TCE), which resulted in contaminating the surrounding site soils. EPA also detected PCBs and VOCs in the groundwater and PCBs on nearby residential, commercial and municipal properties. Further EPA investigations have found PCBs and VOCs in the surface water and sediments of Bound Brook and downstream floodplain soils.

To address the impact of the site on the community early in the Superfund process and to effectively manage site complexities, the CDE site was divided into four operable units (OUs), shown on Figure 1. EPA signed a Record of Decision (ROD) in 2003 for Operable Unit One (OU1) that addressed residential, commercial, and municipal properties in the vicinity of the former CDE facility. In 2004, EPA signed a ROD for Operable Unit Two (OU2) that addressed contaminated soils and buildings at the former CDE facility. In 2012, EPA signed a ROD for Operable Unit Three (OU3) addressing contaminated groundwater. The final action linked to the CDE site is referred to as Operable Unit Four (OU4). For OU4, which is the subject of this Proposed Plan, EPA performed a 10-mile remedial investigation (RI) of Bound Brook. Bound Brook, located in Middlesex County, New Jersey, is a secondary tributary of the Raritan River. The headwaters of Bound Brook originate in areas of Edison Township. Bound Brook flows westerly through the Borough of South Plainfield and into Piscataway Township, where the water is dammed to form New Market Pond, and then flows through Middlesex Borough to the confluence with Green Brook. Green Brook flows to the Raritan River.

The RI results determined that site-related contamination is found within the Bound Brook corridor. The OU4 RI addresses all detected contamination found in the stream channel, adjacent floodplain soils, and tributaries. The OU4 RI also addresses the portion of the contaminated groundwater that was not addressed by the OU3 remedy (i.e., groundwater that discharges to Bound Brook). Additional figures depicting the scope of the Bound Brook investigation can be found in the Administrative Record for the site.

SITE HISTORY

The 26-acre property known as the former CDE facility is located adjacent to Bound Brook. Prior to CDE, the Spicer Manufacturing Company operated on the property from 1912 to 1929, manufacturing universal joints and other automobile components. CDE then manufactured electronic components at the facility, including PCB-containing capacitors, from 1936 to 1962. Much of the PCB-contaminated debris and soil found on site contained Aroclor 1254, suggesting that this was the primary PCB product during much of the company's operations, although Aroclor 1242 was also detected. ("Aroclor" is a PCB trade name that refers to specific chlorinated biphenyl mixtures.) In addition to PCBs, chlorinated organic degreasing solvents, primarily TCE, were used in the manufacturing process. As a result, the primary site-related chemicals of concern are PCB compounds and VOCs. After CDE departed from the facility in 1962, it was operated as a rental property for commercial and light industrial tenants.

In the mid-1980s, NJDEP investigated the presence of tetrachloroethylene (PCE), TCE, and other VOCs in residential wells on Pitt Street in South

Plainfield, to the south and west of the former CDE facility. NJDEP identified the former CDE facility, then known as the Hamilton Industrial Park, as a potential source of this contamination, but investigations at the time were inconclusive.

Testing by NJDEP in the early 1990s led to a request that EPA consider the site for potential emergency response actions, and between 1994 and 1996, EPA conducted sampling at CDE and detected elevated PCB concentrations. In March 1997, EPA ordered the property owner, D.S.C. of Newark Enterprises, Inc. (DSC), to perform a removal action to mitigate contaminated soil and surface water runoff from the facility. In response, DSC paved driveways and parking areas in the former CDE facility, installed a security fence, and implemented drainage controls.

The CDE site was placed on EPA's National Priorities List in July 1998.

Investigations in the late 1990s also found extensive Bound Brook contamination (discussed in detail below), and PCB contamination on properties near the facility. EPA's investigations found PCB-contaminated soil and interior dust on residential, commercial, and municipal properties in the vicinity of the former CDE facility. These findings led to a series of removal actions on nearby properties, performed by EPA and potentially responsible parties (PRPs), and led EPA to focus OU1 on a further investigation of nearby properties. In September 2003, EPA selected an OU1 remedy to address PCB-contaminated soils and interior dust at properties in the vicinity of the former CDE facility. The remedy required the excavation, off-site transportation, and disposal of PCB-contaminated soils, and property restoration. The OU1 remedy also called for interior dust cleaning at properties where PCBs were detected indoors. EPA began remediating the first OU1 properties in 2005; remediation work was substantially completed in 2014. As of February 2014, over 135 properties have been sampled as part of the OU1 remedy (including properties sampled during earlier phases of investigation), leading to remedial actions at 34 properties.

The OU2 RI began in 2000, and included the collection of soil, sediment, and building surface samples as well as installation and sampling of 12 shallow bedrock monitoring wells. Subsequently, EPA issued an OU2 ROD in 2004. The main components of the OU2 remedy included:

- demolition of buildings; excavation of an estimated 107,000 cubic yards of the most highly PCB- and VOC-contaminated soil;
- on-site treatment of excavated soils using low temperature thermal desorption (LTTD), followed by backfilling of excavated areas with treated soils;
- transportation of contaminated soil and debris not suitable for LTTD treatment to an off-site facility for disposal, with treatment as necessary;
- installation of engineering controls including a multi-layer cap or hardscape; and implementation of institutional controls.

In 2006, the OU2 remedial action began and was substantially completed in September 2012. While still in the planning stage, the Borough of South Plainfield has identified the property as part of a redevelopment zone, with the potential for commercial reuse consistent with the implemented remedy.

As previously mentioned, site-related groundwater contamination was initially investigated in 2000. EPA initiated the OU3 RI in 2008 by adding eight bedrock monitoring wells to the monitoring well network. These bedrock wells were installed to a depth of 150 feet below ground surface (bgs). A further expansion of the monitoring well network added 14 additional bedrock monitoring wells, four of which were cored for lithologic characterization and rock matrix diffusion sampling. The well depths ranged from 65 feet to 600 feet bgs, resulting in a monitoring network comprised of 34 wells with 137 discrete sampling intervals.

The OU3 RI revealed a complex groundwater flow regime in highly fractured bedrock, with high levels of VOCs and other compounds trapped within the pore spaces of the Passaic Formation (consisting of shale, mudstone and sandstone). The investigation also revealed several high capacity water supply pumping centers that exert significant control over the regional groundwater flow regime, several of which have been intermittently operational since the releases occurred at the former CDE facility. These hydraulic influences led to an extensive, area-wide VOC groundwater plume, and allowed for a wider distribution of contamination to the bedrock pore spaces.

EPA issued the OU3 ROD in September 2012. The remedy selected in the ROD included institutional controls and long-term monitoring of groundwater and vapor intrusion, and incorporated a waiver of groundwater ARARs due to technical impracticability.

The OU3 ROD also identified the potential for contaminated groundwater discharge to surface water at levels that would pose an unacceptable risk. Specifically, the OU3 ROD required further assessment of the potential for release of PCBs from the groundwater to surface water, and deferred a decision on contaminated groundwater that had the potential to discharge to the brook to the OU4 remedy.

OU4 CHARACTERISTICS

Previous Sampling Efforts and Results

In 1997, EPA collected soil, sediment and surface water, developing a preliminary characterization of a 2.4-mile stretch of the stream corridor near the former CDE facility. EPA also collected biota samples (small mammals, crayfish, forage fish, and edible fish) along Bound Brook and conducted sediment toxicity testing to support a preliminary ecological risk assessment (ERA). The ERA concluded that the structure and function of the stream ecosystem within Bound Brook and its corridor was at risk from chemical contamination. In response, on August 8, 1997, NJDEP issued an interim fish consumption advisory for Bound Brook and New Market Pond. The ERA conclusions are found in the 1999 *Final Report: Ecological Evaluation for the Cornell-Dubilier Electronics Site.*

Because most of the Bound Brook watershed is developed, with many industries and potential sources of contamination, EPA concluded that a study of the entire Bound Brook corridor would be necessary. EPA also addressed known source areas (e.g., the OU2 facility) first.

In addition to the preliminary Bound Brook sampling in 1997, a number of sampling activities took place between 1999 and 2008 that were incorporated into EPA's overall understanding of the site:

- In April 1999, NJDEP collected sediment samples from 33 locations in Spring Lake, Cedar Brook, and a second tributary stream between Maple Avenue and Cedar Brook. The samples were analyzed for PCBs and pesticides. Results in surface and subsurface sediments from Spring Lake and its tributaries were non-detect.
- In 1999, as part of the OU1 investigation, EPA collected samples from residential properties bordering the Bound Brook at Fred Allen Drive and Sillaci Lane to determine whether flooding may have resulted in PCB contamination at these properties. Sampling indicated that the residential properties were not affected, but that the neighboring floodplain soils did have PCB contamination.
- In 1999, buried debris was discovered in Veterans Memorial Park, primarily in the form of roofing materials and asbestos. Working with the Borough of South Plainfield, EPA tested the debris and soils in the park, concluding that the debris did not originate from the CDE operations but that low levels of PCBs (presumably deposited from flooding) were found in buried soils at the park. South Plainfield performed an extensive debris removal action under NJDEP direction, with the understanding that EPA would evaluate the PCB residues as part of its Bound Brook study.
- In April 2007, erosion exposed buried capacitor debris on the banks of the Bound Brook nearby the former CDE facility. In response, in the Fall of 2008, EPA conducted a removal action to armor the banks of Bound Brook with geotextile fabric and rip-rap adjacent to the former CDE facility and along the wetlands that border the former CDE facility property.
- During implementation of the OU2 remedy, soil sampling and test pits identified high levels of PCBs and buried capacitors along the edge of the OU2 remedy's southern and eastern boundaries, adjacent to the Bound Brook, indicating that buried capacitors were present throughout that area.
- In response to the conditions addressed in the 2008 removal action (armoring of the stream banks and the discovery of additional buried capacitors near the Bound Brook, EPA performed a follow-up investigation of sediments, surface water and biota, which updated the 1997 preliminary ERA. EPA collected additional fish and invertebrate (clam) samples in Bound Brook to reassess ecological risks and to "fingerprint" the PCB congeners[1]

[1] PCBs are a group of 209 different compounds. A PCB congener is any single, well-defined chemical compound in the PCB category. Environmental studies sometimes focus on specific PCB congeners (rather than "total PCBs") because different PCB congeners were used for different purposes, and certain PCB congeners have demonstrated more pronounced health effects in the environment.

within Bound Brook between the former CDE facility and New Market Pond. In addition, 12 sediment samples were analyzed for PCB congeners and considered in the reassessment. These sediment samples were co-located with some of the biota stations. The 2008/2009 Reassessment supported the 1997 conclusion that an ecological risk to fish and wildlife exists within the Bound Brook corridor, including Spring Lake. The reassessment also suggested that no improvement in sediment/biota conditions had occurred during the intervening 11 years.

All previous surface water, sediment, and soil sampling results from the Bound Brook were incorporated into the 2014 OU4 RI. In addition, the OU4 study area includes the stretch of Bound Brook that flows through the Woodbrook Road Dump Superfund site. The Woodbrook site is a former dump that accepted household and industrial waste as well as CDE capacitors. The Woodbrook site was listed on the NPL in 2003. Bound Brook sediment and surface water data collected during the investigation of the Woodbrook site were also incorporated into the OU4 RI.

<u>Site Overview</u>

A River Mile (RM) system was developed for the OU4 RI, with RM0 placed at the confluence of Bound Brook and Green Brook (Figure 1). This river mile system was used to position RI sampling locations, reference historical sampling locations, and describe the location of prominent site features. The upstream extent of the investigation area ended at RM8.3, the Talmadge Road Bridge on Bound Brook in Edison Township. The downstream extent is at RM (-1.6) nearby the Shepherd Avenue Bridge on Green Brook in Bridgewater.

The upland areas surrounding the OU4 study area contain a mixture of land uses including residential, commercial, industrial (including railroads), and recreational or undeveloped land.

Physical Characteristics of the Site

A few notable prominent site features in the OU4 study area include: Confluence of Bound Brook and Green Brook (RM0); New Market Pond dam (RM3.4); Confluence of Bound Brook and Cedar Brook (RM5.75); Twin Culverts (RM6.55) near the former CDE facility; Woodbrook site (RM7.4 to RM7.8); and, Talmadge Road Bridge (RM8.3).

A 1.6-mile stretch of Green Brook was included in the RI for potential site-related impacts. Green Brook has comparatively higher flows compared to Bound Brook and its sediment bed consists of coarse-grained material. The floodplain uses in this area are characterized as residential and public land, similar to the Green Brook's confluence with Bound Brook. Downstream of New Market Pond, Bound Brook is comparatively shallow and its bed consists of coarse-grained material. The brook flows through a residential neighborhood with some light industrial/commercial use surrounded by forested lands.

New Market Pond is a constructed impoundment that stretches from RM3.4 to RM4.1. The pond originally served as a mill pond and was constructed in the early nineteenth century. The pond was dredged in 1985-1986 to a projected depth of 3 feet on the eastern side, transitioning to 6 feet on the western end near the dam. During dredging, a sediment trap was constructed at the inlet to New Market Pond. Following dredging, the area surrounding the pond was developed into a park and the dam was rebuilt. Currently, New Market Pond covers approximately 17.6 acres.

For the next two miles upstream of New Market Pond, the brook is surrounded by industrial facilities (such as MRP Steel Fabrication & Engineering), cemeteries, and wetland areas. Debris fields (cinderblock, rip rap, rocks or other hard debris) are common in this stretch of the brook.

The confluence of Bound Brook and Cedar Brook occurs at RM5.75 in a wetland and parkland area known as Veterans Memorial Park. Approximately one-half mile upstream of Cedar Brook is Spring Lake. Spring Lake originally served as a mill pond in the nineteenth century and varied in shape through the years. The area of the current lake is 6.5 acres and is surrounded by parkland.

Two railroad bridges cross Bound Brook adjacent to the former CDE facility located between RM6.2 and RM6.55 at the twin culverts.

The former CDE facility is bounded on the northeast by Bound Brook and the former Lehigh Valley Railroad, Perth Amboy Branch (presently Conrail); on the southeast by Bound Brook and a property used by the South Plainfield Department of Public Works; on the southwest, across Spicer Avenue, by single family residential properties; and to the northwest, across Hamilton Boulevard, by mixed residential and commercial properties.

The land use becomes residential, recreational or open space upstream of the CDE facility. Several ball fields and recreational areas are also nearby in this area.

At RM7.4, Bound Brook passes an active South Plainfield municipal recycling and yard waste drop-off center. The upstream extent of the OU4 study area is the Talmadge Road Bridge located in Edison, New Jersey. In general, this area is surrounded by wetlands, forests lands, and urban areas.

Upstream of the former CDE facility, in addition to the Woodbrook site, three former facilities were identified outside the OU4 study area but near Bound Brook or a tributary: Tingley Rubber Corporation (a former manufacturer of rubber footwear), Gulton Industries, Inc./Hybrid Printhead (a former industrial site), and Chevron Chemical Company/Ortho Division (a former pesticide manufacturer).

The scope of the OU4 study area also included two major tributaries: the unnamed tributary near New Brunswick Avenue at RM4.7 and the unnamed tributary near Elsie Avenue at RM5.5.

Site Geology and Hydrogeology

The surficial geology of the OU4 study area is composed primarily of alluvial and glaciofluvial deposits, with some bedrock outcroppings in the stream bed. Downstream of New Market Pond, the stream bed is composed of mainly coarse-grained sediments. Weathered bedrock borders a band of alluvium material at RM3.5, centered along Bound Brook. Rock outcrops were visible along the banks of Bound Brook downstream of New Market Pond and near RM3. Glaciofluvial deposits lie to the north of the alluvium material. The band of alluvium deposits extends through RM5, with the stream beds consisting of fine-grained sediments accumulating behind the New Market Pond dam.

By RM6.0, the alluvial deposit narrows and is pinched out by glaciofluvial material and weathered shale, mudstone and sandstone. Rock outcrops of the Passaic Formation were visible in the field along the banks of Bound Brook near the former CDE facility, with the stream bed consisting of weathered, fractured bedrock. These formations dominate until RM6.2, when a thin band of swamp and marsh deposits appears. Upstream of the former CDE facility, the field along the banks of Bound Brook is a *phragmites*-dominated wetlands. The swamp and marsh deposits begin to expand at RM7.2, ultimately filling in the southern part of the OU4 study area by RM7.5 and thinning the zone of glaciofluvial material to the north. At RM7.5 the OU4 study area narrows to only include Bound Brook because the banks and tributaries were investigated under the Woodbrook Road site[2]. This stretch of Bound Brook flows through swamp and marsh deposits.

Groundwater to a depth of approximately 120 feet bgs has the potential to be hydraulically connected (discharging) to Bound Brook near the former CDE facility. The water table fluctuates seasonally, occurring in the unconsolidated deposits during periods of high recharge and in the underlying bedrock during seasonally low recharge. The groundwater encountered in the unconsolidated deposits is hydraulically connected to the shallow unconfined bedrock aquifer. Shallow groundwater is also hydraulically connected to surface water bodies including Bound Brook, Cedar Brook, and Spring Lake. Groundwater to a depth of 120 feet bgs moves north and east from the former CDE facility toward Bound Brook, and northwesterly toward the low-lying area at the confluence of Bound Brook and Cedar Brook. To the northeast of the former CDE facility, immediately across Bound Brook, groundwater flow is generally toward the west to a depth of 120 feet bgs, with groundwater discharging to Bound Brook, Cedar Brook and Spring Lake.

Measurements of groundwater elevations between 120 and 160 feet bgs and between 200 and 240 feet bgs indicated that the generalized direction of groundwater movement is to the north with the gradient generally trending northwest near the former CDE facility before turning to the north-northeast as a result of the influence of local pumping centers. Groundwater in water-bearing zones below 120 feet bgs is not hydraulically connected to surface water bodies.

EPA's investigation of the physical characteristics of the OU4 study area consisted of: probing sediments to evaluate sediment texture and unconsolidated sediment depth on transects spaced every 100 feet throughout the investigation;

[2] The 2013 ROD for the Woodbrook site addressed the upland areas but not the Bound Brook itself, which was left to be addressed as part of this phase of the CDE site.

analysis of sediment core samples for physical properties (*e.g.*, moisture content, bulk density, grain size, Atterberg Limits); bathymetric and side scan sonar surveys to map water depth and surface sediment texture in New Market Pond; cross-section surveys of Bound Brook; and the installation and monitoring of water level elevations in Bound Brook, its tributaries, and New Market Pond. Flow measurements were also collected on a monthly basis from various water level locations. These data and other datasets were used to set up and calibrate a hydraulic model and sediment transport model in support of the OU4 FS and allow characterization of net erosional/net depositional characteristics on an overall reach-by-reach (between surveyed cross-sections) basis.

NATURE AND EXTENT OF CONTAMINATION

Much of the contaminant mass present in OU4 was released decades ago (CDE was operating from 1936 to 1962) and has slowly dispersed into the environment through natural fate and transport processes. A summary of contamination within each of the major environmental media at OU4 is provided below.

Sediments

Analytical results indicated the presence of PCB contamination in the sediments of Bound Brook, generally extending from the upstream boundary of the former CDE facility to the dam at the downstream end of New Market Pond in Piscataway (a distance of approximately 3.3 miles along Bound Brook). PCB concentrations ranged from a maximum detection of 85 milligrams per kilogram (mg/kg) in the vicinity of the former CDE facility to approximately 4.4 mg/kg in New Market Pond. Concentrations downstream of the New Market Pond dam decreased markedly to approximately 0.23 mg/kg at Bound Brook's confluence with Green Brook; concentrations in Green Brook ranged from non-detect to 0.16 mg/kg. These findings are consistent with prior EPA sampling of Bound Brook.

PCB analyses of recently-deposited sediments confirmed that contaminated sediments were transported along Bound Brook and suggest that New Market Pond is acting as a sediment trap for solids and contaminants transported downstream. Sediment probing, radiological-dated surface sediment samples, and low resolution sediment cores also revealed that at least two isolated pockets of contaminated sediment are present just downstream of New Market Pond. These locations likely represent the first areas downstream of the New Market Pond dam where the flows and shear stresses decrease to a point such that fine-grained solids (and associated contaminants) in the water column have an opportunity to settle after flowing over the dam. Data from sediment core samples and recently-deposited sediment samples indicate a significant decreasing trend in PCB concentrations with increasing distance downstream of the New Market Pond dam.

Evaluation of PCB data from recently-deposited sediment samples revealed that the highest detected concentrations were located adjacent to the former CDE facility (24 mg/kg). Conversely, PCB concentrations averaged 0.53 mg/kg in samples collected upstream of the former CDE facility, ruling out the existence of an upstream source.

To evaluate the depositional history of sediment contamination in Bound Brook, a high resolution (finely-segmented; approximately 3-5 cm depth sampling intervals) sediment core was collected from a location in New Market Pond anticipated to be continuously depositional based on sediment probing data, observed flow regimes, and historical dredging records. The sediment samples from the high resolution core were analyzed for radionuclides to allow an approximate depositional year to be assigned to each segment. The depositional chronology of Total PCB (congeners) in the high resolution sediment core mirrors the history of the former CDE facility, which operated from 1936 to 1962. The absolute concentration of Total PCB in the high resolution sediment core peaks sharply circa 1956 to 66 mg/kg, and concentrations subsequently decline to 11 mg/kg in the core top sample. This chronology suggests that New Market Pond sediments in 1956 were characterized by PCB concentrations that were about a factor of 5 higher than the current surface sediment concentration.

EPA evaluates sediment sites for the potential that "natural recovery" may be reducing the risks posed by contaminated sediments over time. At Bound Brook, areas like New Market Pond may demonstrate natural recovery because sediments tend to deposit there over time, and newer, cleaner sediments may bury deeper, contaminated sediments. A comparison of current and historical surface sediment data (1997-2011) revealed little change in PCB concentrations over the past 14 years, suggesting that natural recovery is not currently occurring in Bound Brook, because newly deposited sediments are also contaminated. Because there is a demonstrated depositional pattern to New Market Pond, upstream sources associated with the CDE facility (such as the capacitor debris area and the groundwater, discussed below) appear to be continuing sources of contaminated sediments to the lower reaches of the stream. This observation is consistent with trends in the PCB concentrations observed in sediments deposited in New Market Pond over the past 20 years and detected in the high resolution sediment core.

Because areas of Bound Brook are net-depositional, by addressing sediments to a degree that no additional PCB contaminant load enters the system, natural recovery could be a component to a Bound Brook remedy. Based upon the rate of deposition estimated in the RI/FS, PCB concentrations can expect to decrease by 50 percent every 50 years (i.e., a "half-life" of 50 years) if clean sediments are entering the system and burying contaminated sediments. Consequently, if the current average PCB surface sediment concentrations are approximately 10 mg/kg in New Market Pond, after 50 years the PCB concentration would be reduced to 5 mg/kg; and after 50 more years, 2.5 mg/kg, etc.

The conceptual site model of sediment transport suggests that flood-borne contaminated sediments come to be deposited in the floodplains over time, but that the floodplains generally do not act as an ongoing source of PCB contamination to the stream channel.

Floodplain Soil

The OU4 RI included an investigation of Bound Brook floodplain and bank soils for contamination, via soil borings positioned on transects extending out from the brook and along gridded areas positioned near the confluence of Bound Brook and Cedar Brook. The highest PCB floodplain soil concentrations were detected downstream of the former CDE facility, in the floodplains between the confluence of Bound Brook and Cedar Brook (with PCB concentrations detected up to 70 mg/kg on the banks). The area of the Cedar Brook/Bound Brook confluence and a manmade dam between the former CDE facility and the confluence are the first significant depositional zones downstream of the former CDE facility. The RI data indicate that PCB soil contamination is being transported from the brook to the floodplains during flooding events.

The area surrounding the confluence of Bound Brook and Cedar Brook is also the location of Veterans Memorial Park in South Plainfield. Interim remedial measures conducted at the park by the Borough of South Plainfield in 2003 included excavation and off-site disposal of contaminated soil (followed by capping with clean topsoil) and institutional controls designed to limit public access to the floodplains between Bound Brook and Cedar Brook. In the surface soils at Veterans Memorial Park, the highest detected PCB concentration (2013 OU4 RI data) was 1.8 mg/kg; historically, surface soil concentrations at the park were reported as less than 1 mg/kg. Data from residential properties located near the park also characterizes surface soil PCB concentrations as less than 1 mg/kg.

Capacitor Debris

The OU2 remedy addressed total PCB concentrations greater than 500 mg/kg as principal threat waste (PTW). This material was excavated and either treated on-site using low-temperature thermal desorption (LTTD) followed by backfilling of the treated material or, for those materials not amenable to treatment, disposed of off-site. The CDE facility contained large disposal areas containing tens of thousands of discarded capacitor casings and parts contaminated with PCBs, which were excavated for off-site disposal. During the LTTD treatment process, intact capacitors and larger capacitor parts proved to be difficult to treat, and much of this material was sorted out of the soil and also transported off site for disposal. Remaining "low-level wastes" were left on-site under a multi-layer cap.

WHAT IS A "PRINCIPAL THREAT"?

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes an expectation that EPA will use treatment to address the principal threats posed by a Site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund Site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Contaminated ground water generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in ground water may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

The OU2 remedy encompassed the entire 26-acre developed CDE facility, which at the time of the ROD was a fully-occupied industrial facility, zoned for industrial/commercial use. It retains the same zoning today, and the expected future land use (per South Plainfield redevelopment plans) includes commercial use.

During the RI for OU2, capacitors were discovered in the floodplain/wetland area between the former CDE facility and the Bound Brook streambed. EPA concluded that these buried capacitors should be addressed separately, given the different potential land uses and exposure scenarios potentially available for floodplain soils outside of the boundaries of the former facility.

During the OU4 RI, near the boundary of the OU2 soil excavation and remediation area, deep soil borings were advanced to a depth of about 10 feet (300 cm) below grade at four locations at the top of the bank of Bound Brook. The deep soil borings were advanced to determine the vertical extent of capacitor waste previously observed in test pits excavated by EPA in 2008, with final boring locations adjusted for the limits of OU2 soil remediation and associated observations and OU2 post-excavation sidewall sampling results. A PCB concentration of 3,000 mg/kg, encountered in one of these borings, marks the highest PCB concentration detected during the OU4 RI. Moreover, capacitor waste was observed in the borings, confirming that waste is still present in the banks of Bound Brook adjacent to the former CDE facility. While the bank armoring and geotextile installed as part of the 2008 removal action are expected to minimize bank erosion, these are only temporary measures and this area is still considered an ongoing source of PCB contamination to Bound Brook.

Groundwater

The RI for CDE OU3 (site-related contaminated groundwater) revealed the potential for transport of contaminated groundwater from the former CDE facility to Bound Brook, based on stream elevation surveys, groundwater modeling, and consideration of current municipal pumping regimes. The OU4 RI characterized the potential for groundwater contaminants to impact Bound Brook via stream flow surveys and passive sampler (porewater and surface water) deployment and analysis. While the sediment beds in Bound Brook currently possess the largest contaminant inventory, the PCB load in groundwater discharging to Bound Brook near the former CDE facility will become a concern in the future as a potential source of recontamination of remediated sediments. Detected PCB surface water concentrations averaged approximately 75 nanograms per liter (ng/L) adjacent to the former CDE facility.[3] This average exceeds New Jersey's Surface Water Quality Criterion (fresh water, aquatic receptor) of 14 ng/L for total PCBs by a factor of 5. Most of the PCB loading to the water column occurs within one-tenth of a mile downstream of the twin culverts, with total PCB levels increasing from background levels of 4.8 ng/L to an average of 75 ng/L. Total PCB surface water concentrations are relatively constant downstream of the former CDE facility. A porewater contaminant mass flux to Bound Brook was estimated using a calculated groundwater flux and total PCB porewater (0-5 cm) concentrations. The total PCB mass flux increases by a factor of 20 above background in the same one-tenth of a mile interval. The detected presence of volatile organic compounds (VOC) in the porewater and sediments near the former CDE facility provided an additional line of evidence that contaminated groundwater is discharging to Bound Brook. Moreover, elevated total PCB concentrations in the surface water, porewater, and sediments coincide with total VOC porewater detections, suggesting that chlorinated solvents in the groundwater may be enhancing the mobility of PCBs due to co-solvency.

Municipal Water Line

Much of the utility infrastructure in South Plainfield dates from the early 20th century, with limited information about its construction or location. During the OU2 soil remediation work, a 36-inch-diameter municipal water line was uncovered. It is currently owned by the New Jersey American Water (NJAW). NJAW records suggest that the water line was installed in 1908. It is constructed of cast iron and runs across the limits of the former CDE facility from the southwestern corner to the northeastern corner of the property at a depth of approximately 3 to 5 feet bgs.

To protect the integrity of the water line, the OU2 soil excavation removed soil from around the pipe in small sections, with oversight by NJAW. Although the pipeline was not physically damaged during the excavation process, in February 2011, the pipe failed in an area outside the excavation, flooding the OU2 work area. The water was contained within the excavation and did not result in a release of contaminants from the area, and EPA worked with NJAW to dewater the

[3] Several passive samplers were installed directly in an outcropping bedrock fracture, yielding higher concentrations that were accounted for in the averaging.

excavation and repair the broken pipe.

Eventually, the aging of the infrastructure is likely to lead to additional leaks or a rupture in this pipe. The earlier pipe break was addressed with no long-term consequences, because the open excavation areas acted as a retention basin. This would not be true if, in the future, a pipe break or leak were to rupture the cap. Instead, the break could transport contaminated soils into Bound Brook, compromising the integrity of the OU2 remedy and releasing contaminants into OU4. This concern prompted the evaluation of alternatives to prevent, or substantially reduce the likelihood of a break in the future.

SCOPE AND ROLE OF ACTION

This is the final planned action for the site, addressing PCB-contaminated brook sediments and floodplain soil, capacitor debris, contaminated groundwater discharging to Bound Brook, and the municipal water line beneath the former CDE facility. The primary contaminants of concern identified in site soils were TCE and PCBs. (The RI documents the full extent of contaminants detected at the site.) These chemicals were released at the site in large quantities, as evidenced by the extent of the OU2 remedy, which required the excavation and treatment of PTW down to the top of the bedrock surface (approximately 15 feet bgs).

Bound Brook sediments were impacted by historical disposal of capacitors and process waste in the banks of the brook; erosion and transport of contaminated surface soils from the former CDE facility via storm run-off into the brook; and on-going discharge of impacted groundwater to the brook. Although the closure of the former CDE facility and recent remedial action at OU2 reduced the discharge of contaminants to the brook, a significant volume of contaminated sediment remains in the brook and capacitor debris remains buried in the banks adjacent to the former CDE facility. Impacted groundwater continues to discharge to the brook. Contaminated sediments have been carried downstream by surface water flows and have accumulated in low flow areas in the brook, in silt traps, and behind man-made dams and culverts along the brook. The thickest sediment deposits exist in an approximately 3-mile stretch between New Market Pond and the former CDE facility. The majority of the sediment contaminants are persistent and do not degrade readily under most conditions. While some of the contaminants may disperse through erosional forces in the brook (primarily under high flow conditions), estimates of contaminant half-lives from the high resolution sediment core collected in New Market Pond suggest that the sediment PCB half-life is on the order of 50 years, if the conditions associated with the last 20-30 years persist into the future. In general, for the cores examined, the highest concentrations of PCBs were measured at the top of the core, and burial via deposition of relatively "cleaner," more recent solids was not observed.

Floodplain soils are also contaminated due to transport of contaminated sediment into the floodplains/wetlands surrounding Bound Brook during flooding. With uncontrolled sediment deposits in the brook, the potential remains for continued transport of contaminants to the floodplain soils. Degradation and dispersion of existing contaminants are likely to be minimal.

EPA's findings indicate the presence of PTW in the form of capacitors and capacitor debris along the banks of Bound Brook nearby the former CDE facility.

Surface waters are contaminated primarily from resuspension of contaminated sediments in Bound Brook and erosion of the banks during flooding. Surface water sample results also indicate an impact from contaminated groundwater discharge in the vicinity of the former CDE facility. With uncontrolled sediment deposits in the brook, re-suspension and erosion would likely continue to impact surface water quality, along with groundwater discharge.

The 36-inch water line (discovered during the OU2 remedy implementation) that traverses the former CDE facility within the OU2 remedy cap and under Bound Brook will also need to be addressed to ensure that the current and future remedies are not compromised.

ENFORCEMENT

EPA identified potentially responsible parties (PRPs) for the site, including Cornell-Dubilier Electronics, Inc. (CDE), Dana Corporation, and Federal Pacific Electric Company (FPEC). In addition, D.S.C. of Newark Enterprises, Inc. (DSC), the current owner of the site property, has been named as a PRP.

Early in the cleanup process five administrative orders were issued to various PRPs for the performance of portions of removal actions required at the site. These included the site stabilization order issued to DSC in 1997 described above. In 1998, 1999, and 2000, EPA entered into a series of administrative orders with PRPs to implement removal actions at fourteen properties with PCB-contaminated soil.

The PRPs declined to undertake the site RI/FS, and to perform the OU1 and OU2 remedial actions. The Dana Corporation declared bankruptcy in 2006, and EPA reached a bankruptcy settlement in 2008.

Currently, CDE is a viable company with limited resources. The United States has entered into a consent decree with CDE, which has been lodged in federal court and is currently the subject of a motion to enter. DSC is also a viable company: as of September 15, 2014, the United States has lodged a consent decree with DSC in federal court, as well.

SUMMARY OF SITE RISKS

As part of the RI/FS, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The baseline risk assessment includes a human health risk assessment (HHRA) and an ecological risk assessment (ERA).
The cancer risk and non-cancer health hazard estimates in the HHRA are based on current reasonable maximum exposure scenarios and were developed by taking into account various health protective assumptions about the frequency and duration of an individual's exposure to contaminants selected as chemicals of potential concern (COPCs), as well as the toxicity of these contaminants. Cancer risks and non-cancer health hazard indexes (HIs) are summarized below (please see the text box for an explanation of these terms).

The ERA, which served to update and refine the EPA's 1997 preliminary ERA and 2008/2009 Reassessment, consisted of a screening-level evaluation and baseline ERA and followed EPA's Ecological Risk Assessment Guidance for Superfund.

Human Health Risk Assessment

The area along the Bound Brook corridor, which is the subject of this assessment, includes parks, commercial properties and residences. Future land

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of potential concern (COPCs) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other noncancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and noncancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for noncancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one in ten thousand excess cancer risk;" or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one in ten thousand to a one in a million excess cancer risk. For noncancer health effects, a "hazard index" (HI) is calculated. The key concept for a noncancer HI is that a "threshold" (measured as an HI of less than or equal to 1) exists below which noncancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a noncancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site.

use along the brook is expected to remain the same. The baseline risk assessment began by selecting COPCs in surface water, floodplain soil, sediment, fish and shellfish (*i.e.,* Asiatic clams and crayfish). The chemicals of concern (COCs), or those chemicals driving the need to remediate the site, are PCBs; also contributing to the risk are benzidine in surface sediment, and other compounds not considered to be site-related, such as heptachlor epoxide in fish fillet, and dieldrin and select metals (*i.e.*, antimony, iron, lead, manganese, and thallium) in floodplain soil.

The baseline risk assessment evaluated health effects that could result from exposure to contaminated media. Based on the current zoning and anticipated future use, the risk assessment focused on a variety of possible receptors, including current and future:

- Recreationists/Sportsmen: adults and adolescents (7-18 years old) who may wade, fish (but do not consume fish) or otherwise recreate in the study area and might be exposed through: dermal contact with surface water; incidental ingestion of and dermal contact with surface sediment and surface soil; inhalation of volatiles released from surface water; and inhalation of particulates released from surface soil.
- Anglers: adults, adolescents (7-18 years old) and children (0-6 years old) who may consume locally-caught fish or shellfish. While this was in addition to the exposures identified above for recreationists/sportsman adults and adolescents, it was assumed that children are only exposed through consumption of locally-caught fish or shellfish in the household.
- Outdoor Workers: adults who may work to maintain, repair, and/or clean culverts, spillways, bridges, and other structures in the study area and might be exposed through: dermal contact with surface water; incidental ingestion of and dermal contact with all sediment and all soil; inhalation of volatiles released from surface water; and inhalation of particulates released from all soil.
- Residents: adults and children (0-6 years old) who live within or near the 100-year floodplain areas and might be exposed through incidental ingestion of and dermal contact with all soil and inhalation of wind-generated particulates released from all soil.
- Commercial/Industrial Workers: adults who primarily work outdoors on commercial/industrial properties located within the 100-year floodplain areas and might be exposed through incidental ingestion of and dermal contact with surface soil and inhalation of wind-generated particulates released from surface soil.
- Construction/Utility Workers: adults who may perform short-term intrusive work for construction or utility installation, maintenance, or repair and might be exposed through incidental ingestion of and dermal contact with all soil and inhalation of mechanically-generated particulates COPCs released from all soil.

Because the study area is nearly ten miles long and the contamination is not homogeneous, multiple exposure units were established for the risk assessment. They are based upon physical features of the Bound Brook system, as well as historic PCB concentrations, and include: Green Brook, Bound Brook 1 (BB1), Bound Brook 2 (BB2), Bound Brook 3 (BB3), Bound Brook 4 (BB4), Bound Brook 5 (BB5 – adjacent to the former CDE facility), Bound Brook 6 (BB6) and Spring Lake (Figure 2).

The results of the HHRA indicate that there are significant cancer risks and non-cancer health hazards to potentially exposed populations in all exposure units from ingestion of fish and shellfish contaminated with PCBs. For the angler receptors (adult, adolescent and child), exposure to PCBs in fish and shellfish results in either an excess lifetime cancer risk that exceeds EPA's target risk range of 10^{-4} to 10^{-6} or an HI above the acceptable level of 1, or both. Additionally, PCB-contaminated soil in the floodplain presented unacceptable risk and hazard to the adult and child resident in BB3, BB4, BB5 and BB6. Exposure to PCBs in sediment in BB5 for the adolescent recreationist/sportsman also results in unacceptable non-cancer hazard.

EPA's statistical analysis of concentrations of PCBs in fish showed unacceptable risk and hazard associated with concentrations that ranged from 0.23 mg/kg in predatory fish from BB6 (associated with a non-cancer hazard of 8 for the child angler) to 18 mg/kg in bottom-feeding fish from BB1 (associated with a cancer risk of 2 x 10^{-3} and a non-cancer hazard of 40 for the child angler). In floodplain soil, the PCBs range from 41 mg/kg in BB5 (associated with a non-cancer hazard of 30 for the child resident) to 62 ppm in BB6 (associated with a cancer risk of $2x10^{-4}$ and a non-cancer hazard of 60 for the child resident). In sediment, the PCB concentration of 29 mg/kg in BB5 is associated with a non-cancer hazard of 2 for the adult and adolescent recreationalist/sportsman.

A complete discussion of the exposure pathways and estimates of risk can be found in the *Final Risk Assessment Report for OU4* in the Administrative Record.

Ecological Risk Assessment

The overall goal of the ERA was to evaluate whether adverse effects to ecological receptors (i.e., organisms and their respective habitats) are occurring or may occur as a result of exposure to one or more stressors, currently and in the future, in the absence of remedial action.

As noted above, the ERA, which served to update and refine the EPA's 1997 preliminary ERA and 2008/2009 Reassessment, consisted of a screening-level evaluation and baseline ERA and followed EPA's Ecological Risk Assessment Guidance for Superfund.

Appropriate assessment and measurement endpoints were selected based on the environmental setting (stream sediments and surface water and floodplain soils along the brook corridor) along with the ecological conceptual site models, which identified both aquatic and terrestrial receptors. The selected receptors and their endpoints are as follows:

- Aquatic life community (benthic invertebrate and freshwater fish): Long-term maintenance of survival, growth, and reproduction of the benthic invertebrate community and freshwater fish community.
- Semi-aquatic bird and mammal populations: Long-term maintenance of the survival, growth, and reproduction of semi-aquatic bird and mammal populations within several feeding guilds that inhabit/utilize the stream corridor.
- Terrestrial life community (plants and soil invertebrate): Long-term maintenance of a healthy and diverse plant community and long-term maintenance of survival, growth, and reproduction of the soil invertebrate community.
- Terrestrial bird and mammal populations: Long-term maintenance of the survival, growth, and reproduction of terrestrial bird and mammal populations within several feeding guilds that inhabit/utilize mainly the floodplains of the stream corridor.

A variety of wildlife species were selected as representative of semi-aquatic herbivorous, insectivorous, omnivorous, and piscivorous birds and mammals and terrestrial herbivorous, insectivorous, omnivorous, and carnivorous birds and mammals which have been documented or are likely to be present within the Study Area.

Three lines of evidence were used for the community-based assessments: 1) measured chemical concentrations in abiotic media compared with media screening concentrations protective of receptors in direct contact with those media, 2) measured chemical concentrations in biota tissue compared to critical body residues, and 3) sediment toxicity testing and estimated chemical concentrations in fish eggs compared to critical fish egg residues. Two lines of evidence were used for the population-based assessments: 1) food web accumulation modeling in conjunction with toxicity reference values and 2) estimated chemical concentrations in bird eggs compared to critical avian egg residues.

The following conclusions regarding the potential for adverse health effects from exposure to site-related chemicals of potential ecological concerns (COPECs) are made based on the evaluation of the multiple lines of evidence for each assessment endpoint:

- Protection of Benthic Invertebrates: Potential risk to benthic invertebrates may be associated with cis-1,2-DCE, PCBs and vinyl chloride in porewater; and vinyl chloride in surface sediment at EU BB5 and total PCBs in surface sediment in EUs BB2, BB3, BB4, BB5, and BB6.
- Protection of Aquatic Life (Fish): Cis-1, 2-DCE, vinyl chloride, total PCB congeners, and TCDD TEQ (PCBs) in porewater/surface water indicate a potential for adverse health effects in aquatic life. Total PCB Aroclor concentrations in predatory and bottom-feeding fish whole body tissue indicate a potential for adverse health effects.
- Protection of Semi-Aquatic Birds and Mammals: Dietary exposure to total PCBs Aroclors and TCDD TEQ (PCBs) in semi-aquatic insectivorous and piscivorous birds and piscivorous mammals may be associated with adverse health effects, particularly at EUs BB2, BB3, BB4, BB5, BB6, and SL. Dietary exposure to total PCBs Aroclors and TCDD TEQ (PCBs) in some semi-aquatic insectivorous mammals may be associated with adverse health effects, particularly at EUs BB2, BB3, BB4, BB5, and BB6.
- Protection of Terrestrial Plants and Invertebrates: It is not likely that PCBs in surface soil are associated with wide-spread

adverse health effects in terrestrial plants and invertebrates throughout the Bound Brook floodplains. Plant uptake of PCBs is considered to be negligible due to the large molecular weight and strong sorption of PCBs to organic matter and while accumulation in the tissues of soil invertebrates provides direct evidence of bioavailability, bioaccumulation alone is not an indication of adverse health effects.

- Protection of Terrestrial Birds and Mammals: Dietary exposure to PCBs based on site specific bioaccumulation in soil invertebrates may be associated with adverse health effects in terrestrial insectivorous birds and mammals.

A summary of the ERA for each receptor can be found in Table 1. A complete discussion of the exposure pathways and estimates of risk can be found in the *Final Risk Assessment Report for OU4* in the Administrative Record.

It is EPA's current judgment that the Preferred Alternative identified in the Proposed Plan is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Based on the site-specific human health and ecological risk assessment results, human health and ecological risk is shown for PCBs in fish throughout the entire study area. The sediments and floodplain soils are the primary source of the elevated fish tissue PCB concentrations. Furthermore, two source areas that pose an ongoing threat of release have been identified: groundwater discharging to surface water, and the capacitor debris identified in the banks of the brook adjacent to the site.

PCBs in sediments, soil and debris pose an unacceptable risk through direct contact. Other contaminants were also identified under the various recreational, residential and worker direct contact exposure scenarios and considered in the BHHRA, including benzidine, dieldrin, heptachlor epoxide, and select metals. However, given the extent of the PCBs found in these media, a response action that addresses PCBs is expected to address these other contaminants as well. These direct contact risks are predominantly in EUs BB3, BB4 and BB5, from New Market Pond upstream to the former CDE site.

PCBs were also the primary COPEC for ecological receptors for sediments and soil. In addition, the groundwater releasing to surface water, which acts as an ongoing source of PCBs to the brook, also discharges cis-1,2-DCE to porewater and surface sediment at levels that may pose unacceptable risk to benthic invertebrates in BB5.

Therefore, the following remedial action objectives (RAOs) address the human health and ecological risks posed by PCB-contaminated sediment, soil and debris, and releases of 1,2-DCE to surface water, at the site:

Sediment/Floodplain Soils (SS):

- Reduce cancer risks and non-cancer health hazards to acceptable levels for people eating fish and shellfish by reducing the concentrations of PCBs in the sediments of Bound Brook.
- Reduce direct-contact and recreational exposure risks to human receptors to acceptable levels by reducing the concentrations of PCBs in the sediments and floodplain soils.
- Reduce the risks to ecological receptors to acceptable levels by reducing the concentrations of PCBs and VOCs in the sediments and floodplain soils, allowing recovery of fish population.
- Reduce the migration of PCB-contaminated sediments and floodplain soils from upstream areas, including to areas below the New Market Pond dam.

Capacitor Debris (CD):

- Reduce or eliminate the direct-contact threat associated with contaminated soil and debris, including capacitors and capacitor parts in the capacitor debris area to levels protective of current and reasonably anticipated future land uses. The most conservative land use anticipated for the site would be a future recreational user.
- Reduce the risks to ecological receptors by removing or preventing direct contact with concentrations of PCBs in the capacitor debris area.
- Prevent contaminant migration to sediments and surface water.
- Remove, treat, or contain principal threat waste to the extent practical.

Groundwater Discharge to Surface Water (GW):

- Prevent migration of contaminated groundwater above acceptable surface water quality standards to the surface water and sediments.

Municipal Water Line (WL)

- Ensure protectiveness of the OU2 and OU4 remedies by mitigating the potential for failure of the municipal waterline present below the OU2 cap.

Remediation Goals

Sediments and Floodplain Soils - EPA has identified 1 mg/kg PCBs as the remediation goal for sediments and floodplain soil in the study area. This remediation goal is selected based upon the following information:

- For Bound Brook sediments, a site-specific, risk-based calculation of 10^{-6} incremental lifetime cancer risk associated with a human direct contact identified a remediation goal of 1 mg/kg. (The most conservative calculated remediation goal for direct contact concentration associated with a non-cancer hazard (that achieves an HI of 1) in sediments was 13 mg/kg.)
- EPA developed a site-specific "resident-parklands" land use, which identifies conservative and representative land use for exposure to the floodplains of OU4. This exposure scenario for a resident child would yield a 10^{-6} incremental lifetime cancer risk-based preliminary remediation goal (PRG) of 0.76 mg/kg, and a noncancer-based PRG of 2.6 mg/kg.
- New Jersey's promulgated nonresidential direct-contact cleanup criterion for PCBs is 1 mg/kg. While not an ARAR for the sediments, New Jersey has identified 1 mg/kg the appropriate standard for the floodplain soils.

Furthermore, EPA has identified 0.25 mg/kg PCBs as the remediation goal for sediments in the study area to address human consumption of fish tissue and ecological endpoints, to be achieved through active remediation to 1 mg/kg followed by monitored natural recovery. This remediation goal is selected based upon the following information:

- Potential cleanup values calculated for a 10^{-4} incremental lifetime cancer risk for human fish tissue consumption ranged from 0.21 to 0.38 mg/kg. Assuming recent stream deposition patterns continue, after remediation of areas exceeding 1 mg/kg, it is expected that natural recovery would reduce post-remediation sediment concentrations from 1 mg/kg to 0.25 mg/kg in two half-lives, or about 100 years.
- The ecological endpoints associated with PCB exposures generally support a remediation goal of 1 mg/kg and support an action that achieves a protective level in benthic invertebrates, semiaquatic birds and semiaquatic mammals over time, through natural recovery.

The NCP identifies a 10^{-6} risk level as the point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective. EPA has concluded that a 10^{-6} risk level cannot be attained through remediation, given the site's urban setting and the ubiquity of PCBs in the environment, but that a remedy that includes active remediation and natural recovery provides the best conditions for eventually achieving protective levels within EPA's risk range of 10^{-4} and 10^{-6} for the stream corridor.

Other COCs were also identified in sediments and floodplain soils that also contributed to ecological or human health risks, in particular dioxin-like PCB congeners and benzidine. The ecological risk-based remediation goal for total PCBs of 1 mg/kg was derived under the assumption that remediation of total PCBs will reduce the levels of PCB congeners with dioxin-like toxicity to a protective level as well. The 2014 resampling for benzidine found that this chemical was co-located with PCBs in a pattern that suggested it to be a site-related constituent, and that addressing total PCBs to 1 mg/kg would also address benzidine. A site-specific, risk-based remediation goal of 0.1 mg/kg has been identified for benzidine.

Groundwater - For discharge of groundwater to surface water, the remedial action objective leads to a preventive goal of eliminating the potential for PCB releases to surface water through a groundwater transport pathway. VOC transport to surface water is also occurring (primarily 1,2-cis-DCE, a degradation byproduct of TCE) , with some limited, localized exposure concerns, but the VOCs mobilize the PCBs, and it is the PCBs, and not the VOCs themselves, that are the primary concern of this component of the remedy. Thus, the remedial alternatives considered addressing both VOCs and PCBs, with the goal of eliminating PCB loading into stream sediments and surface water. Based upon site-specific modeling, even low levels of PCB releases through this pathway could result in unacceptable exposures in sediments and surface water if perpetuated over the long term. The remediation goal for this groundwater pathway would, therefore, be evaluated in the same way, by preventing releases to surface water that would result in sediment concentrations in excess of the sediment remediation goal for fish consumption of 0.25 mg/kg.

Capacitor Debris - This area is made up of floodplain soils located between the OU2 cap and

Bound Brook, so the remediation goal for addressing this area is the same as for the floodplain soils, 1 mg/kg PCBs. This area also contains large quantities of capacitor debris and has been identified as PTW, given the high concentrations of PCBs in close proximity to surface water. Based upon EPA's Guidance on Remedial Actions for Superfund Sites with PCB Contamination, for sites in industrial areas, PCBs at concentrations of 500 mg/kg or greater will generally constitute a principal threat, and this was EPA's PTW threshold for OU2. For sites in residential areas, principal threats will generally include soils contaminated at concentrations greater than 100 mg/kg PCBs. For the capacitor debris areas in the soils outside of the boundaries of the former facility, EPA is using the more conservative guideline of 100 mg/kg PCBs to define PTW for OU4, as opposed to the 500 mg/kg value used for OU2. The 100 mg/kg PTW threshold was also used for the Woodbrook site. The difference between 100 mg/kg and 500 mg/kg is expected to have little effect on the cost of the capacitor debris alternatives, because EPA expects that there is little difference in volumes between these two values.

SUMMARY OF REMEDIAL ALTERNATIVES

EPA has divided the OU4 remedy into four distinct components:

- Sediment/Floodplain Soils (SS) Alternatives - Areas of the Bound Brook and floodplains, inclusive of New Market Pond, with elevated PCBs.
- Capacitor Debris (CD) Alternatives – This area includes the area of the floodplain adjacent to OU2 (former CDE facility), a subset of the floodplain soils subject to special consideration because of the elevated levels of PCB contamination in the soil and capacitor debris in this area.
- Groundwater (GW) Alternatives - An area of contaminated groundwater conservatively estimated at 1,600 linear feet of stream channel near the former CDE facility where contaminated groundwater discharges to surface water.
- Waterline (WL) Alternatives - Options for addressing a municipal water line that passes under the OU2 cap with potential to threaten its long-term integrity, and the protectiveness of both OU2 and OU4 remedies.

The CD and GW alternatives address ongoing sources releasing to Bound Brook, so the SS alternatives assume that CD and GW alternatives have been implemented first. All costs are expressed as net present value. The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction.

Description of Sediment/Floodplain Soils (SS) Alternatives

Bound Brook sediments and floodplain soils outside the CD areas contain PCB concentrations ranging up to, and in very limited cases exceeding, 100 mg/kg nearby the former CDE facility. Because PCB levels in excess of 100 mg/kg are infrequent in sediment and floodplain soils, EPA considers these isolated areas "low-level threat" wastes, and considered removal and capping options, but not treatment.

The "Reaches:" The FS divided the study area sediments and their adjacent floodplains into sections, or "reaches," as follows:

- Reach 1A is upstream of the CDE facility in Bound Brook, and Reach 1B is upstream in Cedar Brook, including Spring Lake, in areas outside the limits of Bound Brook flooding.
- Reach 2 includes the section from RM6.55 to New Market Pond.
- Reach 3 includes New Market Pond.
- Reach 4 includes all the areas downstream of New Market Pond.

The RI showed that Bound Brook is characterized by shallow bedrock, relatively thin layers of unconsolidated sediment, and shallow base flow water depths; therefore, excavation or dredging options are more appropriate for contaminated sediment than capping. As discussed below, capping is considered for contaminated floodplain soils but EPA has concerns regarding the performance of a cap during flood events, and even under base flow drainage conditions in portions of the floodplain.

Furthermore, the areas of Middlesex and Somerset Counties adjacent to Green Brook, including the Bound Brook corridor, are stressed by a lack of stormwater drainage capacity. Under the Water Resources Development Act of 1996, the U.S. Army Corps of Engineers (USACE) and its non-federal sponsor, NJDEP, are implementing a long-term plan to address flooding in the area, through the Green Brook Flood Control Project.[4] The Green Brook Sub Basin includes portions of 13 municipalities and covers 65 square miles. In consultation with the Green Brook Flood Control Commission, USACE and NJDEP are implementing a multi-year project to mitigate flooding, including flood walls and levees, stream modifications, and dry detention basins. Modifications to Bound Brook above New Market Pond are in the early planning stages and still some years away; however, these stakeholders have indicated that capping would further reduce flood storage capacity, be detrimental to that project, and would likely not be supported by those stakeholders.

Three alternatives were considered:

- Alternative SS-1: No Action
- Alternative SS-2: Excavation/Dredging of Sediments and Soils with Monitored Natural Recovery
- Alternative SS-3: Excavation/Dredging of Stream Sediments, Excavation with Capping of Floodplain Soils, Dredging with Capping of New Market Pond, Limited Hotspot Dredging of Depositional Areas with Monitored Natural Recovery

Alternative SS-2 would rely on dredging or excavation to remove contaminated material, followed by restoration of disturbed areas. Alternative SS-3 would include dredging or excavation in certain areas combined with capping. Both alternatives would rely on monitored natural recovery (MNR) to aid in achieving remedial objectives.

Common Elements for SS Alternatives

The remedial alternatives, except Alternative SS-1 (no action), include long-term monitoring and institutional controls. The degree of monitoring that would be needed is different for each alternative. Alternatives SS-2 and SS-3 would both incorporate institutional controls, which are administrative and legal controls that help to minimize the potential for human exposure to contaminants, such as the fish advisory already in place. For Alternative SS-3, institutional controls consisting of restrictions on land use of capped floodplains soils would be implemented. If wastes are left on the site, or if the time required to achieve the RAOs is greater than five years, five-year reviews would be conducted to monitor the contaminants and evaluate the need for future actions.

The active remedies rely on monitored natural recovery to aid in achieving the remedial objectives that pertain to fish recovery. As noted previously, the remediation goal of 1 mg/kg PCBs is not adequate, on its own, to achieve a protective level for a 10^{-4} incremental lifetime cancer risk for fish consumption, which would require a target range of 0.21 to 0.38 mg/kg. EPA expects that, by addressing PCB-contaminated sediments and soils at levels in excess of 1 mg/kg and eliminating ongoing sources of contamination to the sediment (the CD areas and the groundwater discharging to Bound Brook), the OU4 remedial action, including natural recovery at the rates suggested by the high-resolution coring data, will reduce contamination in fish tissue to protective levels within a reasonable timeframe, conservatively estimated at 100 years.

Alternative SS-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	
Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action at OU4 to prevent potential exposure to sediment and soil contamination.

Alternative SS-2: Excavation or Dredging of Sediments and Excavation of Soils with Monitored Natural Recovery

Capital Costs	$187,300,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$30,000
Total Present Value	$177,600,000
Construction Time Frame	2 to 3 years

This alternative would remove contaminated sediment from Bound Brook and New Market Pond, and contaminated soil from the surrounding floodplain, thereby preventing human exposure and controlling impacts to the environment. Options considered for removing material consist of dredging sediments in the wet or diverting Bound Brook and excavating contaminated sediments "in the dry," coupled with conventional excavation of floodplain soils. The majority of the contaminated

[4] http://www.nan.usace.army.mil/Missions/CivilWorks/ProjectsinNewJersey/GreenBrookSubBasin.aspx

sediments, an estimated 34,000 cubic yards, are located between RM6.55 (the twin culverts) and New Market Pond. The majority of the contaminated floodplain soils, an estimated 150,000 cubic yards, are located near the OU2 facility, and near the confluence of Bound Brook and Cedar Brook, adjacent to and including portions of Veteran's Memorial Park.

Two methods were considered for removing contaminated sediments, dredging and excavation:

Stream Dredging: Contaminated sediment from the brook would be mechanically dredged through the use of cranes and environmental buckets, excavators, drag line, and other equipment mounted on amphibious vehicles operating in the brook. Floodplain soils would be excavated using conventional construction equipment with appropriate controls and modifications for wetland/soft soil areas (*i.e.*, track-mounted, low pressure or high floatation vehicles). Backfill would be placed in disturbed areas to restore the streambed and floodplain to pre-removal grades, to cover and isolate dredging residuals or remaining contaminants in the soil, to provide material for habitat restoration, and to restore surface water drainage patterns. Disturbed areas would be backfilled and regraded with material suitable for habitat restoration. Armoring would be provided as necessary to control erosion. Dredged sediments and excavated soils would be transported to a central processing site prior to shipment off-site for ultimate disposal. At the processing site, sediment and soil would be segregated based on the characteristics of the material as determined during the design phase. Sediment and floodplain soil would be processed as necessary for disposal. Processing steps would include dewatering to a moisture content required for additional processing or disposal of dredged solids. Either passive or mechanical dewatering could be used. Material characterized as hazardous or as Toxic Substances Control Act (TSCA) waste would be stockpiled separately from material classified as non-hazardous; material requiring processing prior to disposal would be stockpiled separately from material not requiring processing. The processed solids would be shipped to an off-site disposal facility.

Stream Excavation: This action would remove contaminated sediment from Bound Brook by dewatering the streambed and removing the contaminated sediment “in the dry.” Conventional excavation would be used to remove contaminated floodplain soils. Surface water flow in Bound Brook would be temporarily diverted around the active work area to allow conventional excavation of sediments under relatively dry conditions (“in the dry”), rather than dredging. Excavation of the sediment in the dry allows greater control over sediment removal because of greater access, reduces the post removal processing requirements due to the lower moisture content of the sediment, and minimizes the potential for dredging-related sediment resuspension and contaminant migration. The brook would be divided into segments based on natural boundaries at the site (*e.g.*, culverts, bridges, dams, etc.). Working segment by segment, a pumping and pipeline system would be constructed to dewater the brook. Temporary coffer dams would be installed across the brook and the surface water pumped through a temporary pipeline around the active portion of the work. Following dewatering, contaminated sediments would be removed from the bed of the brook using cranes, conventional excavators, drag line, and other construction equipment. The excavated sediment would be characterized for disposal and shipped to an off-site disposal facility. Once excavation of a segment was completed, backfill would be placed in disturbed areas to restore the streambed to pre-excavation conditions and allow for habitat restoration in the brook.

Diverting the stream and excavating sediments allows for marginally better sediment management performance during the removal, and appears to be a better fit with several of the groundwater alternatives, and is also less costly. Stream diversion and excavation was assumed, for cost-estimating purposes for this alternative. However, it is possible that a combination of excavation and dredging would be used.

While it would be technically feasible to dewater New Market Pond and excavate the sediment in the dry, this approach has a number of drawbacks, including odors and fish kills. Capturing and releasing fish up or downstream of the pond would allow the spread of PCB-contaminated fish beyond the limits of the fish advisory and increase the likelihood of consumption of the contaminated fish. For this reason, hydraulic dredging is preferred as the process for removing the sediment in New Market Pond necessary to achieve the PCB remediation goal of 1 mg/kg. Hydraulic dredging is described in more detail below in Alternative SS-3.

This alternative comprehensively addresses streambed sediments from approximately RM6.55 (at the twin culverts) down to and including New Market Pond (Reaches 2 and 3). Two depositional area hotspots have also been identified, at RM2.48

and RM 3.03 in Reach 4, which exceed the remediation goals. These hotpots would also be addressed in this alternative, probably through dredging. Based upon the 100-foot spacing of transects during the RI, it is possible that other small depositional areas could be identified with further sampling. This Alternative includes a provision for further sampling to attempt to identify other hotspots, primarily in Reach 4, and assumes that other identified hotspots would also be removed.

This alternative includes the cleaning of the existing silt trap (located upstream of the inlet to New Market Pond). After completion of the active remedy, MNR is expected to further improve conditions in surface water and sediments such that concentrations of contaminants in fish tissue would improve to acceptable levels over time. Future maintenance of the New Market Pond silt trap is expected to be advantageous for long-term improvement of fish tissue, as this mechanism (along with New Market Pond itself) has proved to be effective at collecting contaminated sediments. Therefore, this alternative includes the periodic maintenance (through sediment dredging every five years) of the silt trap to aid in the effectiveness of MNR.

To minimize local truck traffic, the preferred method to transport soil and sediment off-site for disposal would be by rail. This would require locating a processing site with a rail spur or siding. The feasibility of constructing a dedicated rail spur at the designated sediment/soil processing site should be evaluated during the RD stage of the project. If a processing site is not available with rail access, trucks may be used.

Alternative SS-3: Excavation/Dredging of Stream Sediments, Excavation with Capping of Floodplain Soils, Dredging with Capping of New Market Pond, Limited Hotspot Dredging of Depositional Areas with Monitored Natural Recovery

Capital Costs	$165,700,000
Operation & Maintenance Costs	$638,445
Periodic Costs	$30,000
Total Present Value	$157,800,000
Construction Time Frame	2 to 3 years

This alternative would also rely on dredging or excavation for much of the contaminated material, similar to Alternative SS-2 (for example, the options for excavation or dredging of stream sediments from RM6.55 to New Market Pond would remain unchanged), but this alternative also combines excavation or dredging with capping in several discrete areas of OU4, as described below. *Hydraulic Dredging and Capping in New Market Pond:* While stream excavation is preferred for most of Bound Brook, hydraulic dredging does represent a feasible option for New Market Pond (Reach 3). Approximately 67 percent (71,000 cubic yards) of the contaminated sediment exceeding the PCB remediation goal is located in New Market Pond. Under Alternative SS-3, hydraulic dredging would be used for partial removal of contaminated sediment in New Market Pond, coupled with construction of an engineered cap to isolate the remaining sediments from the environment. Partial removal would entail the removal of enough material from the pond to accommodate the cap thickness without causing additional flooding, followed by construction of a sub-aqueous cap to contain residual contaminants (assumed to be a 24-inch thick sand cap). The depth of dredging would be required to be approximately 6 inches greater than the planned thickness of the cap to maintain water depth. Use restrictions would be established for the capped areas to protect the areas from unnecessary disturbance and to provide for long-term access for cap inspection and maintenance.

Consolidation/Capping of Floodplain Soils: Typical upland isolation capping consists of a soil cap a minimum of 24 inches thick, although the cap thickness may increase based on site-specific conditions. Capping would not be suitable in the portions of the floodplain bordering the streambed because of the potential for disrupting normal surface water flow patterns and the need for extensive armoring to protect the cap during high flow conditions. However, capping may be an effective alternative in portions of the broad expanses of floodplain where contamination is laterally extensive (*i.e.*, the area near the confluence of Bound Brook and Cedar Brook). This would involve fully excavating approximately 15 acres of the floodplains near the stream channel (an estimated 90,000 cubic yards), and removing an additional 25,000 cubic yards of surface soils from the remainder of the floodplain to allow for capping. The total volume excavated would be 115,000 cubic yards.

Under this approach, approximately 23 percent (35,000 cubic yards) of the contaminated floodplain soil would be left in place under a soil cap. The capped area would cover approximately 17 acres. A minimum two-foot thick cap would be constructed over contaminants in the floodplain using standard construction equipment. The intent of the cap would be to isolate remaining contaminants in the soil from the environment and direct contact, not to control permeability or prevent leaching. The need for armoring of the isolation layer would be evaluated during the RD phase. Prior to capping, a surface water drainage plan would be developed for the area to ensure that the cap did not disrupt current flow patterns or that alternative drainage routes were available. Use restrictions would be established for the capped areas to protect the area from unnecessary disturbance and to provide for long-term access for cap inspection and maintenance.

The capping in New Market Pond and in floodplains would require long-term cap maintenance. A 30-year cap maintenance period has been used for cost-estimating purposes, but the caps would need to be maintained in perpetuity.

Depositional Area Monitored Natural Recovery: The OU4 RI identified significant areas within the brook where sediments contained contaminants at concentrations below remediation goals. For example, with few exceptions, remediation goal exceedances were not found in Reaches 1A, 1B and 4, and remedial action will not be required in these areas. However, discrete depositional areas were identified within these generally low concentration areas (at RM 2.48 and RM3.03), and contaminant concentrations in these discrete depositional areas were found to exceed remediation goals. Under Alternative SS-3, sediment hotspots in these discrete depositional areas would not be removed, but addressed by MNR.

<u>Description of Capacitor Debris (CD) Alternatives</u>

EPA defined principal threats for OU4 as soil and capacitor containing debris with concentrations of PCBs in excess of 100 mg/kg located within the floodplain along the Bound Brook banks of the former CDE facility. The FS identified seven remedial process options for the CD areas. EPA carried through to this Proposed Plan the three “best fit” remedial alternatives. EPA’s “A Guide to Principal Threat and Low-Level Threat Wastes”, November 1991, affirms EPA’s preference for permanent remedies to treat PTWs, wherever practical.

Therefore, for CD areas, the capping alternative has not been carried forward, leaving only “no action” and treatment, excavation and disposal alternatives for the OU4 principal threat wastes. The alternatives under consideration consist of:

- Alternative CD-1: No Action
- Alternative CD-3: Full-depth Excavation, Thermal Desorption, and On-Site Burial of Residuals
- Alternative CD-4: Full-depth Excavation and Off-Site Disposal

Both excavation alternatives (CD-3 and CD-4) involve conventional excavation of the CD areas from the sloped banks of Bound Brook adjacent to the former CDE facility using the remediation goal of 1 mg/kg, followed by filling and regrading to restore the banks, and installation of an armored layer to prevent erosion during future flood events. The twin culverts in the Bound Brook channel will also be removed as part of these alternatives to allow access to suspected CD areas and to mitigate the erosional areas caused by the presence of the culverts. Confirmatory sampling would be employed to verify adequate removal, which is expected to be required throughout the entire length of the banks previously armored by an EPA removal action. The primary difference between the excavation alternatives would be the use of on-site treatment and placement of the treated waste below a cap in a disposal area located within the footprint of the former CDE facility (under the OU2 cap) for CD-3, as opposed to off-site disposal for CD-4.

Common Elements of CD Alternatives

All of the remedial alternatives except Alternative CD-1 include long-term monitoring and institutional controls to limit future land uses. The degree of monitoring that would be needed is different for each alternative. Institutional controls are administrative and legal controls that help to minimize the potential for human exposure to contaminants. For Alternative CD-3, institutional controls consisting of restrictions on land use of capped floodplain soils would be implemented. Similarly, for Alternative CD-4, restrictions on land use to prevent future residential use would be required. (Five-year reviews are already required for the OU2 and OU3 remedies.)

Alternative CD-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action at the site to prevent potential exposure to soil contamination or PCB-contaminated capacitor debris.

Alternative CD-3: Full-depth Excavation, Thermal Desorption, and On-Site Burial of Residuals

Capital Costs	$42,400,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$42,400,000
Construction Time Frame	1 year

Under this alternative, after excavation, PTWs with PCB concentrations greater than 100 mg/kg would be treated by an on-site treatment process such as low temperature thermal desorption (LTTD). The potential location of the treatment pad for the on-site treatment unit has not been selected at this time. The 26-acre facility has been designated a redevelopment zone by the Borough of South Plainfield, and EPA is supportive of putting the land back to productive use. Therefore, the location of the treatment facility may depend upon the status of the redevelopment project.

The process would begin with excavation of the contaminated soil and debris, using sheeting, coffer dams and other stream diversion techniques as necessary, followed by post-excavation sampling. The volume of material is estimated to be 31,900 cubic yards. LTTD is a physical separation process by which wastes are heated in thermal desorption units to volatilize water and organic contaminants. A carrier gas or vacuum system transports volatilized water and organics to the gas treatment system. Contaminants are removed through condensation followed by carbon adsorption or they are destroyed in a secondary combustion chamber or catalytic oxidizer. For treatment of the OU4 soils, the post-treatment target would be less than 1 mg/kg PCBs and treated material would be placed on site. Debris that could not be successfully treated would be disposed of offsite. For cost-estimating purposes, it is assumed that approximately 10 percent of the material excavated under this alternative would not need to be treated and could be placed under the cap without LTTD treatment.

Under Alternative CD-3, treated soil and debris would be consolidated into a single location (on the former CDE facility property, if appropriate) and capped with a multi-layer cap design similar to that used to remediate OU2. The FS estimate assumes that the material would be placed at the former CDE facility in a 10-acre area, which would result in a relatively thin layer (18 inches) of new waste spread over a wide area, to allow for proper drainage of the OU2 property.

This alternative would include capping and engineering controls and institutional controls to restrict land use, wetland restoration and long term Operation and Maintenance (O&M) of the cap. Since wastes would be left on-site, five-year reviews would be conducted to ensure the remedy is protective and evaluate the need for future actions.

Alternative CD-4: Full-depth Excavation and Off-Site Disposal

Capital Costs	$32,800,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$32,800,000
Construction Time Frame	1 year

Under this alternative, all CD waste would be excavated and disposed off-site at an appropriate disposal facility. The excavation would proceed as described above for Alternative CD-3; however, no on-site treatment would be conducted. Instead, all excavated material would be shipped off-site for disposal. As with Alternative CD-3, this alternative would include wetland restoration, institutional controls to restrict future land use and a five-year review.

Description of Groundwater (GW) Alternatives

The GW alternatives would mitigate the discharge of contaminated groundwater to Bound Brook adjacent to the former CDE facility. Contaminated groundwater (OU3) is present in the bedrock matrix (as demonstrated by results of bedrock porewater analyses performed during the OU4 RI) and is discharging to the brook. The OU3 RI results, combined with numerical modeling, indicate that contaminated groundwater identified in OU3 has the potential to impact conditions in Bound Brook for many decades or even centuries to come. The groundwater discharge has the potential to recontaminate remediated sediments in Bound Brook and cause unacceptable risks to ecological receptors.

Remediation of the contaminated groundwater source itself was evaluated in OU3 and was found to be technically impractical. Because groundwater restoration is impracticable, to be protective in the long term, the remedial alternatives should be able to prevent exposure to receptors in perpetuity by preventing contaminant migration from groundwater to surface water. This was a primary factor in the development and evaluation of the GW alternatives.

The alternatives under consideration consist of:

- Alternative GW-1: No Action
- Alternative GW-2: Monitoring and Institutional Controls
- Alternative GW-3: Hydraulic Control of Groundwater
- Alternative GW-4: Permeable Reactive Barrier (PRB)
- Alternative GW-5: Reactive Cap

Under Alternative GW-2, monitoring the sediment and water quality would be performed in Bound Brook in lieu of active remediation of groundwater discharges. Alternative GW-3 consists of a groundwater withdrawal and treatment system intended to capture and treat the portion of the contaminated groundwater that would otherwise discharge into the brook as contaminated porewater. Alternatives GW-4 and GW-5 are passive treatment systems. Alternative GW-4 consists of a PRB installed in a trench adjacent to the brook, and Alternative GW-5, a reactive cap installed in the bed of the brook.

Potential alternatives that were examined and determined to be impractical included damming the brook to create an impoundment deep enough to counteract the head of discharging groundwater (the inundation area would have a substantial deleterious effect on surrounding properties) and an impermeable cap in the streambed (models indicate the discharge would shift to a tributary to Bound Brook, where it would continue to cause an adverse impact on the water body). The concept of restarting the Spring Lake well field, which, when operating prior to 2003, created a downward gradient that may have reduced much of the discharge to surface water, was also considered but not retained. The owner of the well field, Middlesex Water Company, does not currently have a business interest in reactivating this system, which operated at a rate of as much as 2 million gallons per day, nearly 1,400 gallons per minute (gpm). In contrast, the pumping system required to achieve capture of the discharging groundwater, as discussed above in Alternative GW-3, would require only 25 gpm, and would be situated so that it will create the needed drawdown across the identified area, whereas the Spring Lake system would create a much larger drawdown, but not necessarily across the necessary capture zone.

Common Elements for GW Alternatives

The GW alternatives (with the exception of Alternative GW-1, No Action) each include long-term monitoring to evaluate groundwater and porewater quality associated with groundwater discharge to Bound Brook. Each of the alternatives also focus only on the portion of the contaminated groundwater that discharges through the bed of Bound Brook, since the rest of the groundwater plume was addressed in the OU3 ROD. Due to the long-term back-diffusion of contaminants from the bedrock matrix and the associated contaminated groundwater discharge, each of the GW alternatives would have to be operated and maintained for the same timeframe, which is expected to be on the order of hundreds of years. Alternatives GW-4 and GW-5 both employ passive treatment technologies to achieve remedial action objectives for the groundwater discharging to Bound Brook. The difference between the alternatives is the location at which the groundwater is treated – either in a vertical trench adjacent to the brook or at the point of discharge in the bed of the brook via a reactive cap. For Alternatives GW-4 and GW-5, the collected monitoring data would be used to evaluate the frequency of media replacement required in the PRB and reactive cap, respectively, in addition to evaluating achievement of remediation goals and assessing attenuation.

For all the GW Alternatives, five-year reviews would be conducted to ensure the remedy is protective and evaluate the need for future actions. A groundwater use institutional control, in the form of a New Jersey Classification Exception Area (CEA), is already required as part of the OU3 remedy, which addresses the area-wide site-related groundwater contamination. An OU4 groundwater remedy would necessitate the expansion of the planned CEA to include the OU4 area as well.

Alternative GW-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action at the site to prevent discharge of contaminated groundwater to Bound Brook.

Alternative GW-2: Monitoring, Institutional Controls

Capital Costs	$1,900,000
Operation & Maintenance Costs	$10,270,000
Periodic Costs (Monitoring)	$0

Total Present Value	$12,200,000
Construction Time Frame	1 year

This alternative consists of monitoring the sediment and water quality in Bound Brook in lieu of active remediation of groundwater discharges. Under Alternative GW-2, the effectiveness of MNR in achieving remedial action objectives for the groundwater discharging to the brook would be evaluated. Institutional controls such as the fish advisory already in place would be maintained to protect against human exposure in downstream areas of the brook.

Monitoring would be initially conducted on a quarterly basis, until baseline conditions are established. Once established, monitoring could be adjusted to a semi-annual or annual frequency, depending on the results. Monitoring would include the following elements: porewater sampling using passive samplers, the installation and sampling of groundwater monitoring wells along the length of the impacted section of the brook (including single- and nested, multi-depth wells), surface water grab samples, installation and monitoring of piezometers, and collection and analysis of sediment samples. Samples would be analyzed for PCBs and VOCs.

Alternative GW-3: Hydraulic Control of Groundwater

Capital Costs	$8,100,000
Operation & Maintenance Costs	$15,160,000
Periodic Costs (Monitoring)	$0
Total Present Value	$23,300,000
Construction Time Frame	1 year

This alternative would establish hydraulic control (containment) of the portion of the groundwater discharging from the former CDE facility to Bound Brook. Hydraulic control of groundwater is envisioned to entail installing three vertical extraction wells on the former CDE facility property, each to a depth of approximately 75 feet bgs, and pumping the wells at a combined rate of approximately 25 gpm. The groundwater extraction well depths and total flow rate are based on preliminary results of a MODFLOW groundwater extraction simulation performed as part of the OU3 RI, and would need to be refined during remedial design (RD).

Alternative GW-3 incorporates an on-site treatment system to treat the extracted groundwater. Although the final technology selection for an *ex situ* treatment system would be deferred to the RD phase, representative process options were selected and included oil-water separation, acidification to control scaling, sediment filtration, oxidation to treat organics, catalytic filtration for metals removal, carbon effluent polishing, neutralization, and discharge to a local municipal treatment works or Bound Brook.

It is expected that Alternative GW-3 would need to be operated for decades or potentially centuries, i.e., as long as contaminants in the bedrock matrix would prevent groundwater from meeting remedial action objectives in Bound Brook. A groundwater monitoring program would be established to monitor the performance of the hydraulic control remedy. Because of the duration of operation, the RD would need to include O&M requirements for the various treatment system components, and to optimize the design based on minimizing O&M costs (*e.g.*, use of solar power). The building housing the treatment components, as well as the piping connecting the various components of the system, would need to be designed for an extended operational life. Contaminant concentrations may fluctuate over time; therefore, this system would need to be flexible enough to allow for use of different technologies, as needed.

Alternative GW-4: Permeable Reactive Barrier

Capital Costs	$18,700,000
Operation & Maintenance Costs	$3,780,000
Periodic Costs (Monitoring)	$4,580,000
Total Present Value	$27,100,000
Construction Time Frame	1 year

Alternative GW-4 consists of a PRB in a trench located on or adjacent to the former CDE facility to intercept and treat contaminated groundwater prior to discharge to Bound Brook. A PRB passively treats contaminated groundwater as it flows through reactive media installed within the trench. Primary design factors for the PRB include: the depth to bedrock, the required depth and breadth of the groundwater capture zone, the residence time required for treatment of the contaminants to desired concentrations, and the treatment media to be installed. On the basis of preliminary modeling results and site conditions documented by the OU3 RI, it is anticipated that the PRB would be approximately 1,500 feet in length, running along the northeast and northwest boundary of the former CDE facility adjacent to the brook.

According to data collected during previous investigations in OU2 and OU3, bedrock is present at depths between 0 to 10 feet bgs at the former CDE facility. Groundwater modeling suggests that the PRB trench would need to be 50 to 75 feet deep to capture the groundwater discharging to the brook. To excavate a trench to that depth, controlled blasting would be used to create a rubble zone in the bedrock. After blasting, if the trench walls were stable, the rubble could be removed. If the trench walls were not stable, it might be necessary to backfill the trench (to stabilize the area) with a combination of treatment media and appropriately selected fill material. Unstable conditions in the trench could impact the cost of subsequent media change-outs and potentially, the effectiveness of the system.

Controlled blasting would increase the bedrock permeability and would be expected to modify the flow paths in the bedrock aquifer in a manner advantageous to the groundwater treatment objective by creating a zone of higher permeability around the trench which should encourage the flow of contaminated groundwater through the treatment media.

The reactive media in the trench would be selected based on the primary constituents of concern and a treatability study conducted during the RD. Because it is anticipated that groundwater will continue to discharge contaminants to the brook for decades or longer, the PRB would need to be designed to be maintained and operated over a very long period. Over time, the reactive media in the PRB would be consumed and require replacement.

During the RD, approaches to facilitate media replacement would be evaluated. These may include the use of panels, canisters, or reactors containing treatment media that can be inserted and removed readily; injection of treatment media into the rubble zone created by the blasting; or removing/replacing the rubble zone and directly backfilling treatment media into the trench. The selection of the appropriate option would be finalized based on conditions in the trench. Panels or canisters would allow for more ready replacement of spent media, but are likely to have less treatment capacity and require more frequent change-out. Backfilling the trench with the media would likely result in greater treatment capacity between change-outs, but each change-out would be more expensive and labor-intensive. Given the depth of the trench, cranes and booms would be required for either option. The need for equipment access over the life of the treatment process could affect development in a portion of the former CDE facility property. A monitoring program would be required to evaluate the effectiveness of the treatment and detect the need for reactive media replacement.

Alternative GW-5: Reactive Cap

Capital Costs	$13,500,000
Operation & Maintenance Costs	$3,230,000
Periodic Costs (Monitoring)	$5,370,000
Total Present Value	$22,100,000
Construction Time Frame	< 1 year

Alternative GW-5 consists of installation of a reactive media layer in the bed of Bound Brook to intercept and passively treat contaminated groundwater at the point of discharge. During RD, the optimal sequence for installation of the reactive cap in relation to the remediation of the soil and sediment, and the capacitor debris areas, would be determined.

Constructing a reactive cap could require diverting the water in the brook via coffer dams and a pipeline diversion system (using procedures similar to those discussed for SS-2) and over-excavating the streambed within the known discharge zone to an appropriate depth, such that the top of the reactive cap (including armoring layer) would be at the same grade as the current streambed. Bedrock outcrop areas could require blasting to accommodate the thickness of the reactive cap, although data from the remediation of OU2 suggests that the upper portion of bedrock is weathered and likely is rippable using conventional excavators.

The reactive material would be installed in manufactured ‘blankets’, with the reactive media sandwiched between two layers of filter fabric. Use of media blankets would facilitate regular removal and replacement of the reactive media. Following installation, the media blankets would be covered with a sand layer to allow habitat to be reestablished in the area. Armoring would be provided for the cap to protect it from erosion during high flows.

A pilot study would be required to determine the required cap thickness. Detailed measurements of the historical and current river flows would be required to establish locations within the cap alignment requiring additional armoring or additional thickness of the sand layer. Porewater flux monitoring, along with multiple rounds of groundwater monitoring, both for the pre- and post-treated groundwater, would be conducted as part of the pilot study.

Based on the results of particle tracking and sediment transport modeling conducted for the OU4 RI, the cap would likely be placed between RM6.2 and RM6.5 of Bound Brook, a distance of approximately 1,600 linear feet, from the twin culverts to the Lakeview Ave Bridge. The cap would encompass the entire width of the brook, extending up the side slopes, and would be anchored along the shore line.

It is anticipated that the reactive cap would need to remain in place in perpetuity. The life of the treatment media is subject to the contaminant load and the groundwater flux, and would require replenishment as part of its O&M cycle. A porewater monitoring program would be established to verify that the reactive cap is treating contaminants in the groundwater prior to discharge to surface water. Contaminant levels in the porewater would be evaluated during the RD to indicate when media change out is required. Alternative monitoring approaches may also be introduced during the RD to monitor system performance.

<u>Description of Water Line (WL) Alternatives</u>

Approximately 1,700 feet of 36-inch diameter ductile iron pipe crosses the former CDE facility property. This high pressure potable water transmission line was uncovered during excavation of OU2, and although it was not physically damaged during the excavation process, the water line ultimately developed a leak during that remedial activity. Although the pipeline was repaired, as the water lines ages, it is possible that it will leak again or break. Depending on the extent of the leak or break, the water could impact the integrity and protectiveness of OU2 soils remedy and release contaminants to Bound Brook thereby threatening the OU4 remedy.

To address this potential threat to the OU2 and OU4 remedies, the alternatives under consideration consist of:

- Alternative WL-1: No Action
- Alternative WL-2: Water Line Monitoring System, Replacement in Existing Easement As Necessary
- Alternative WL-3: Water Line Replacement in New Easement

Alternative WL-1: No Action

Capital Costs	$0
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$0
Construction Time Frame	0 years

Regulations governing the Superfund program require that the "no action" alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action at the site to address the concerns associated with the existing high pressure water line below the former CDE facility property.

Alternative WL-2: Water Line Monitoring, Replacement as Necessary

Capital Costs	$500,000
Operation and Maintenance Costs	$100,000
Periodic Costs (Monitoring)	$4,100,000
Total Present Value	$4,700,000
Construction Time Frame	< 1 year

Alternative WL-2 consists of leaving the water line in its current location and installing a pipeline monitoring system to detect leaks in the segment of the pipeline crossing the former CDE facility property. Pipeline monitoring systems for single walled pipes, such as the existing water main, typically involve monitoring the pressure within the pipe. If the pressure drops outside of a designated range, an alarm sounds indicating a leak. The system can either be designed to automatically shut down the segment of the pipeline that the monitoring system indicates has a leak, or the decision on action can be deferred to a designated responder.

This alternative would require the following elements:

- Install a pipeline monitoring system to detect potential leaks in the water line.
- Install a control system that would allow the portion of the pipeline crossing the former CDE facility property to be shut down in the event of a leak.
- Install an alarm and emergency alert system to alert a designated person or team tasked with responding to a leak.
- Establish a program for addressing future leaks.
- Review the proposed development plans for the former CDE facility property to assess the ability to replace the pipeline in the future once the site has been developed.

This alternative assumes that pipeline leaks would lead to replacement of the water line in year ten of the estimate, in a location parallel to its current location crossing the former CDE facility property. At that time, it would take a number of months to design and construct a new pipeline in the event that was necessary due to a leak, during which time the main would need to remain in operation. This would necessitate temporary repairs to the pipeline which could impact operations on the property as well as expose site users to contaminants.

Alternative WL-3: Water Line Replacement in New Easement

Capital Costs	$8,900,000
Operation & Maintenance Costs	$0
Periodic Costs (Monitoring)	$0
Total Present Value	$8,900,000
Construction Time Frame	< 1 year

This alternative consists of relocating the existing water line to a new easement that does not cross the former CDE facility property. Alternative WL-3 would entail constructing a similarly sized, new pipeline in the public right-of-way (ROW). The new pipeline route would need to be determined during the RD; a proposed route was developed by New Jersey American Water (NJAW) for evaluation purposes. Modifications to the existing distribution system would be done as necessary to accommodate the changes to the system configuration.

This alternative would require addressing the following elements:

- Negotiations with the Borough of South Plainfield regarding construction of the pipeline in the public ROW.
- Negotiations with the owner of the railroad line (Conrail) regarding a jack and bore under their tracks at two locations.
- Evaluation to establish compliance with regulatory requirements for construction of the pipeline under Bound Brook.
- Modifications to the existing pipeline system to accommodate the proposed changes in the pipeline configuration.
- Abandoning the existing pipeline in place by disconnecting the pipeline from the water distribution system at both ends. The existing pipeline would be grouted closed at both ends.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative within each component of OU4 against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. A detailed analysis of alternatives can be found in the FS.
Table 2 summarizes the estimated costs for each remedial alternative under consideration.

Sediment and Floodplain Soils (SS)

1. Overall Protection of Human Health and the Environment

Alternative SS-1, No Action, would not be protective of human health and the environment since it does not include measures to prevent exposure to contaminated sediment and soil.

Alternatives SS-2 and SS-3 would reduce the cancer risk to be within EPA's risk range and noncancer hazards to be at or below a hazard index of 1 for direct contact and, coupled with MNR, to reach protective levels for fish consumption and environmental protection within reasonable period of time; therefore, they are protective. Alternative SS-2 (Dredging/Excavation of Sediments, Excavation of Soils) would mitigate the exposure risks in Bound Brook, Green Brook, and the associated floodplain areas through the removal of contaminated sediment and soil. Alternative SS-3 (Dredging/Excavation with Capping) would mitigate the exposure risks in Bound Brook, Green Brook, and the associated floodplain areas through the removal of contaminated sediment and soil combined with capping and the use of MNR for depositional area hotspots. For both alternatives, surface water quality would be improved by the removal of the contaminant source and the cleaning of the existing silt trap (located upstream of New Market Pond).

Alternative SS-3 would leave contaminants in place, isolated underneath a barrier cap in New Market Pond and in portions of the floodplain soils that do not immediately border the brook. This alternative would be protective only if the caps were maintained in perpetuity.

Alternative SS-3 would rely on MNR to address two known, and possibly other, depositional areas containing concentrations of PCBs exceeding remediation goals in Reach 4. More broadly, Alternatives SS-2 and SS-3 remediate sediments that exceed 1 mg/kg PCBs, and would rely on MNR to further reduce sediment and surface water concentrations to levels that will allow fish tissue to recover to protective levels.

2. Compliance with ARARs

Except for Alternative SS-1, the alternatives would comply with ARARs regarding remediation and filling in floodplains, work in wetland areas, waste management, air quality, and storm water management, and would meet NJDEP’s chemical-specific ARAR for PCBs in soils, based on non-

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that are legally applicable, or relevant and appropriate to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.
Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

residential direct contact. Both SS-2 and SS-3, which include placement of material within the brook, would need to be implemented in compliance with the Clean Water Act, 33 U.S.C. § 404(b)(1) and 40 CFR Part 230, which require that disturbance to aquatic habitat be minimized to the extent possible. Compliance with the substantive elements of New Jersey Flood Hazard Control Act (FHCA) Rules (NJAC 7:13-10 and 7:13-11) including those addressing placement of material in the flood hazard area and impacts to the riparian zone would also be required. Alternative SS-2 would comply with the FHCA. Alternative SS-3 calls for the removal of one foot of the floodplain areas to be capped and the placement of two feet of capping and cover; the FHCA Rules may necessitate additional removal (e.g., to a depth equal to the placed material, two feet) to allow for capping.

3. Long-Term Effectiveness and Permanence

Alternative SS-1 is neither effective in the long-term nor a permanent solution to controlling the contaminants in the brook sediment and floodplain soils.

Alternative SS-2 would remove the contaminated sediment in the brook and surrounding contaminated soils to meet the remediation goal of 1 mg/kg. It is both permanent and effective in the long-term in controlling contaminants in the brook and surrounding floodplain, as well as in improving surface water quality. Alternative SS-3 would similarly remove contaminated sediment in the brook and soil along the banks of the brook in likely scour areas. Alternative SS-3 would also remove surface soils in the remainder of the floodplain and leave deeper contaminants in place and rely on capping to be protective over the long term. Capping would occur where surface water modeling indicates that erosional surface water stresses would not occur during flood events. For Alternative SS-3, long-term protectiveness requires capping be maintained in perpetuity, with monitoring and regular maintenance, to prevent direct contact. In addition, monitoring and maintenance of the cap would be required to allow for MNR to achieve the fish consumption remediation goal of 0.25 mg/kg, because elevated PCB concentrations remaining in the floodplain could, with the failure of the cap, become a source of PCBs to the remediated brook sediments.

Alternatives SS-2 and SS-3 require that the fish advisory stay in place while concentrations of PCBs decline in fish tissue, to be protective in the long term.

For both alternatives, surface water quality would be improved by the removal of the contaminant source and the cleaning of the existing silt trap (located upstream of New Market Pond). Future maintenance of this silt trap may prove advantageous for long-term improvement of fish tissue, as this device, and New Market Pond, have proved to be effective at collecting contaminated sediments and are expected to continue to do so.

For Alternative SS-3, capping in New Market Pond is protective over the long term by installation of armoring in the areas of the pond, near the dam/outfall, where there is currently evidence of erosional stresses. As with capping in the floodplain, long-term protectiveness of capping in New Market Pond is dependent upon the monitoring and periodic maintenance of the cap. Please refer to the "implementability" criterion, below, for a discussion of maintenance dredging in New Market Pond.

4. Reduction of Toxicity, Mobility, and Volume through Treatment

Alternative SS-1 does not include any treatment and would not reduce the toxicity, mobility, or volume of contaminants associated with the OU4 study area. The remaining alternatives would permanently reduce the volume and mobility of contaminants in the brook and floodplain soils by their removal and appropriate disposal. The alternatives do not require treatment, though treatment may be required prior to land disposal (stabilization/solidification, and/or, if necessary based on the characteristics of the sediment, thermal destruction).

5. Short-Term Effectiveness

Alternative SS-1 does not present any short-term risks to site workers or the environment because it does not include any active remediation work.

Among the sediment remediation techniques, dredging presents a greater risk of material being released during the removal process, although the risk is small and can be controlled by the use of silt curtains and silt fences downstream of active operations. Diverting the stream to allow for excavation of sediments poses a risk of localized flooding and the associated potential redistribution of contaminants, in the event that heavy precipitation exceeds the bypass system's capacity to divert the flow in Bound Brook. Both methods would disrupt existing ecosystems in the wetlands and greenbelt spaces during removal operations; however, mitigation techniques are available to allow these areas to recover. Both the active alternatives (Alternatives SS-2 and SS-3) would have similar risks to remediation/construction projects of similar size and scope, including the potential for exposure to low levels of a range of contaminants, working on or around heavy equipment, working in water/wet environments, disruptions of ecosystems in the brook and in surrounding forested areas, increased construction-related traffic, quality of life impacts to nearby residents (noise, odors, lights), localized flooding during construction, and the potential spread of contaminants in the brook from dredging or runoff from excavation or an accidental release during construction.

In all cases, it is anticipated that these risks could be mitigated through the use of engineering controls, safe work practices, and personal protective equipment (PPE).

6. Implementability

Because Alternative SS-1 would not entail any construction, it would be easily implemented.

The two remaining alternatives were developed based on industry-standard construction techniques and would be technically feasible to implement. However, because of the size of the remediation area and the number of parties that own property within the limits of the designated OU4 study area identified in the FS, it may be difficult to negotiate necessary access with all parties involved. Furthermore, for Alternative SS-3 in areas that require capping, deed notices or restrictive covenants would be need to be secured from property owners to assure the maintenance of the caps in perpetuity.

Some restrictions may affect the implementability of capping of floodplains as part of Alternative SS-3. In the FS, EPA estimated that capping could be implementable on 17 of the 32 acres of floodplains with contaminated soil at concentrations exceeding remediation goals. For this to be implementable and cost effective on those 17 acres, the FS assumes that 1 foot of surface material would be removed followed by the placement of a 1-foot sand layer as a contact barrier, plus a 1-foot organic soil layer to allow for ecosystem re-establishment. While technically feasible, it may not be implementable as planned in the FS. The loss of even a small amount of flood storage caused by the addition of capping material could have adverse effects in this urban setting that is already plagued with flooding problems. Capping may prevent the remedial action from meeting the FHCA expectation of "no net fill" in a wetland, or of restoring the existing habitats when the action is complete. These issues could be resolved by simply excavating additional material to allow for one-to-one capping and filling; however, if this change were to be required, given the estimated depth of PCB-contaminated soils of 3 feet and the removal of 2 feet, installing and maintaining (in perpetuity) the cap over a relatively thin layer of PCB-contaminated soil would influence the cost difference between the two alternatives, as discussed below.

Much of the 17 acres that could be capped under Alternative SS-3 is used for active or passive recreation in Veterans Memorial Park, and a remedy that relies of capping in this area may face municipal opposition based on concerns that use restrictions might not be sufficiently protective, Capping also be opposed by stakeholders in the Green Brook Flood Control Project, as it may impede later USACE/NJDEP flood control actions.

Similarly, implementability of capping in New Market Pond may also be limited. Its estimated that 1 foot of material would be hydraulically dredged (contrasted with the 2.5 feet dredged to achieve complete removal in Alternative SS-2), followed by the placement of a 6-inch thin sand cap. Areas near the dam/outfall would also require an armoring layer of stone, also estimated at 6 inches. If, during design, the volumes of material at depth were found to be less than predicted, there would be no advantage to capping, and maintaining in perpetuity, a relatively thin layer of PCB-contaminated sediment at depth instead of removing it.
In addition, given Piscataway Township's periodic dredging of New Market, installing a thin layer cap would impose restrictions on the Township and expose the cap to risk of damage.

7. Cost

The present value costs are $187.3 million for Alternative SS-2 and $165.7 million for Alternative SS-3. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs. The largest single cost item for Alternative SS-2 is the cost of off-site disposal, at $45.4 million. This cost conservatively assumes that 10 percent of the excavated or dredged material will require disposal at a TSCA or RCRA subtitle C hazardous waste landfill, and that the remaining material can be sent to a subtitle D nonhazardous waste landfill.

The primary cost difference between Alternatives SS-2 and SS-3 is the additional removal and off-site disposal costs for removing the additional volumes as part of Alternative SS-2. The cost of cap installation and maintenance, even in perpetuity, is somewhat less than the capital cost of complete removal and disposal. As discussed above, if additional excavation were to be required to allow for a one-to-one placement of a cap under Alternative SS-3, Alternative SS-3 the cost difference between Alternative SS-2 and SS-3 would be lessened substantially.

Capacitor Debris (CD)

1. Overall Protection of Human Health and the Environment

Alternative CD-1 (No Action) would not be protective of human health and the environment since it does not include measures to control the release of contaminated soil and debris buried in the side slope of the former CDE facility/bank of Bound Brook. Alternatives CD-3 and CD-4 are protective since the contaminated materials would be completely removed from the side slope and surrounding area to meet the 1 mg/kg remediation goal, with reconstruction afterwards to restore habitat. The contaminated materials would either be treated and buried on the former CDE facility (Alternative CD-3) or hauled off site to a landfill for disposal (Alternative CD-4). Both of these alternatives would remove a risk to human health and the environment and a potential source of contamination to Bound Brook.

2. Compliance with ARARs

Except for Alternative CD-1, the alternatives would comply with ARARs regarding remediation and filling in floodplains, work in wetland areas, waste management, air quality, and storm water management, and would meet NJDEP's chemical-specific ARAR based on non-residential direct contact for PCBs in soils As with the soil/sediment component, compliance would need to be established with the Clean Water Act, 33 U.S.C. § 404(b)(1) and 40 CFR Part 230, as well as the substantive elements of New Jersey Flood Hazard Control Act Rules (N.J.A.C. 7:13-10 and 7:13-11).

3. Long-Term Effectiveness and Permanence

Alternative CD-1 is neither effective in the long-term nor a permanent solution to controlling the contaminants buried in the side slope of the former CDE facility. This area is subject to erosion that would result in material contaminating Bound Brook.

Both Alternatives CD-3 and CD-4 would completely remove the capacitor debris and in a manner that addresses risks to human health and the environment, and achieve the remediation goal of 1 mg/kg for floodplain soils.

4. Reduction of Toxicity, Mobility, and Volume through Treatment

Alternative CD-1 does not include treatment and would not reduce the toxicity, mobility, or volume of contaminants in the CD areas. Alternative CD-3 would result in treatment of the majority of excavated material to reduce its toxicity prior to placement of the material on the former CDE facility (assuming it could be implemented successfully, as discussed below). Alternative CD-4 would not require treatment as a principal component, and would only treat a limited amount of the waste material if required to allow for disposal in a landfill.

5. Short-Term Effectiveness

Alternative CD-1 does not present any short-term risks to site workers or the environment because it does not include any active remediation work. Alternatives CD-3 and CD-4 would have similar risks to general construction activities such as working around/on/with heavy equipment and hauling equipment, and working near water. In addition, short-term risks would include the potential for exposure to a range of contaminants at potentially high concentrations, the potential for a construction-related release of contaminants to the brook, disruption of wildlife in the brook and in surrounding wetland/floodplain areas, increased construction traffic, and impacts to those living or working adjacent to the remediation area (noise, odors, lights).

On-site thermal desorption and placement of the treated material under the OU2 cap presents an additional risk for Alternative CD-3 beyond those associated with Alternative CD-4 due to the additional effort and processes associated with this alternative.

6. Implementability

Because Alternative CD-1 would not entail any work, it would be easily implemented. Alternatives CD-3 and CD-4 are based on industry-standard construction techniques and are technically feasible to implement.

Based upon EPA's experience with LTTD during the OU2 remedy (treating essentially the same material) there are several additional implementability concerns with Alternative CD-3. For example, inability of the treatment system to reduce contaminants to acceptable levels when treating capacitors and capacitor parts was a frequent problem during the implementation of the OU2 remedy. The material in the "capacitor disposal area," the central disposal area on the facility, was not treated at all; rather, it was removed for off-site disposal because it was predominantly debris and not contaminated soil. The CD areas of OU4 are relatively close to this disposal location, and the OU4 RI sample results suggest that at least part of the CD areas have similar characteristics. Furthermore, during the OU2 LTTD treatment, the unit was unable to meet the treatment criterion when processing soils containing capacitor parts, leading to additional handling costs to remove the capacitors from the soils before treatment. While it is possible that a change in LTTD treatment temperature or residence time may address this issue, such changes would result in operational costs substantially greater than the assumed industry standard ($150/ton was used in the FS).

Air emissions from an on-site treatment system may present an additional implementability challenge for use of LTTD. However, during the OU2 remedy, EPA did not encounter significant difficulties with air emissions.

As with the other remedial components, Alternatives CD-3 and CD-4 incorporate an assumption of access/leasing of property for a central processing location to handle the excavated material. During the OU2 remedy, EPA successfully operated the LTTD unit at the former CDE facility property; depending upon the status of the redevelopment of this facility, some limited space may be available for use. However, if this were not possible, siting such a facility elsewhere may be more challenging. Also, the likely siting location for a treatment facility under Alternative CD-3 would be at the rear (southeast) of the facility, a location slightly lower in elevation and more prone to flooding in a severe flood event.

Alternatives CD-3 and CD-4 would disrupt wetland ecosystems adjacent to Bound Brook during removal operations; however, these could be restored following remediation. Moreover, the ecosystem would be improved as a result of the remedial action.

7. Cost

The present values for the CD alternatives are $42.4 million for Alternative CD-3 and $32.8 million for Alternative CD-4. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs. These costs are predominantly associated with the capital costs of implementing the remedy. The costs of maintaining the treated soils and debris under the cap for Alternative CD-3 after implementation would be incremental to the cost of maintenance of the OU2 remedy. The difference in cost of on-site treatment versus off-site disposal is relatively small ($150 per ton for on-site treatment, $165 per ton for off-site disposal without treatment); the substantial cost savings associated with off-site disposal is associated with additional costs of siting the temporary treatment unit. Moreover, as discussed above under the implementability criterion, the Alternative CD-3 assumption of a per ton rate of $150 may not be achievable for 100 percent of the CD material, particularly the soil containing capacitor debris. Additional costs might be incurred for off-site disposal of contaminated material that could not be treated.

Under Alternative CD-4, EPA conservatively assumed, for cost-estimating purposes, that 10 percent of the CD material would require off-site treatment by incineration prior to disposal. Based upon experience with the capacitor disposal area addressed as part of the OU2 remedy, it is possible that none of the CD material would actually require incineration under TSCA, resulting in a reduction in the cost of Alternative CD-4 from $32.4 million to $30.6 million.

Groundwater Discharge to Surface Water (GW)

1. Overall Protection of Human Health and the Environment

Alternative GW-1 (No Action) would not be protective of human health and the environment since it does not include measures to prevent the continuing discharge of contaminated groundwater to Bound Brook. Alternative GW-2 would monitor the impact of the discharge of contaminated groundwater to Bound Brook and rely on MNR to address the impacts; based upon site-specific modeling of this release, it is uncertain whether MNR can sufficiently mitigate this release to achieve protectiveness. Alternatives GW-3 (Hydraulic Control), GW-4 (Permeable Reactive Barrier), and GW-5 (Reactive Cap) are protective of human health and the environment in the portion of Bound Brook affected by groundwater discharge, through containment or groundwater/pore water treatment prior to discharge to surface water. Remediation of the groundwater source was assessed in the OU3 ROD and found to be technically impracticable given site conditions.

2. Compliance with ARARs

Except for Alternative GW-1, the alternatives would comply with location-specific ARARs regarding remediation and placement of fill in floodplains, construction work in wetland areas, waste management, air quality (monitoring and emission limitations, as needed), storm water management, and discharge water quality limits. Under Alternatives GW-3, GW-4 and GW-5, surface water quality would be improved, though at this time it is not possible to predict when chemical-specific water quality ARARs will be met. Alternative GW-2 would have no impact to the ongoing discharge of PCBs at concentrations greater than surface water quality standards.

3. Long-Term Effectiveness and Permanence

Alternative GW-1 is neither effective in the long-term nor a permanent solution to controlling the ongoing release of contaminants to the brook from the groundwater. Alternative GW-2 relies solely on natural recovery that would occur within the sediments after release of contaminants from groundwater to surface water, and is not expected to be effective due to the long-term, ongoing release of contaminants from the bedrock matrix.

The remaining groundwater alternatives would contain and/or treat the contaminated groundwater discharging to Bound Brook and would require regular O&M of system components for decades to hundreds of years. Alternative GW-3 (hydraulic containment) requires active pumping and treatment to be effective, and requires the greatest level of O&M over time – both to manage operations of the pumping system as well as the operation of the groundwater treatment system. In addition, periodic equipment replacement and repair costs are likely to be somewhat greater when compared to Alternatives GW-4 and GW-5.

Alternatives GW-4 and GW-5 are passive treatment systems that could operate with limited oversight except for monitoring of the reactive media; however, the reactive media would require periodic replacement based on the rate of contaminant flux into the brook. The need for replacement across the length of the PRB or reactive cap could be difficult to assess through monitoring, because the rock matrix on both sides of the PRB would be contaminated.

Under Alternative GW-4, the PRB could not be placed precisely where it may best serve its purpose, but can only be placed where it can be best installed given surface obstructions. By contrast, if implemented while the stream bed is being excavated or dredged under Alternatives SS-2 or SS-3, the reactive cap associated with Alternative GW-5 could be placed where needed to intercept and treat discharging groundwater/pore water.

In addition, while the mass of VOC and PCB contamination within the bedrock matrix is substantially higher in concentration at the former CDE facility, there is substantial contaminant mass that has migrated, under the brook itself and north of the brook. The reactive cap is expected to be more effective than the PRB because it would receive and treat the pore water from any recharge point (i.e., from the north or south side of the brook or from beneath it), whereas the PRB will only treat the mass flux that passes through it from the south.

Changes in pumping operations at the local municipal well fields could impact the need for, and requirements of, all three of the groundwater remediation systems (GW-3 through GW-5); the timing or impact of these changes cannot be assessed at this time. Given that groundwater source remediation was found to be technically impracticable under current site conditions, the three alternatives represent reasonable long-term solutions for addressing the release of contaminants to Bound Brook.

4. Reduction of Toxicity, Mobility, and Volume through Treatment

Alternatives GW-1 and GW-2 do not incorporate treatment and hence would not reduce the toxicity, mobility, or volume of contaminants associated with the OU4 Study Area. Alternatives GW-3, GW-4 and GW-5 would not address the source of the discharge in the groundwater but would either eliminate the discharge of, or treat, the contaminated groundwater discharging to Bound Brook. Under Alternatives GW-3 through GW-5, the amount of contaminants that would be treated is small compared to the mass of contaminants found in the bedrock matrix at the former CDE facility; however, each alternative would treat the mass of contaminants currently discharging to Bound Brook. Mobility and volume are not affected under any of the alternatives.

5. Short-Term Effectiveness

Alternatives GW-1 and GW-2 do not present any short-term risks to site workers or the environment because they do not include any active remediation activities.

Alternative GW-3 would involve installing extraction wells, a pumping system and an *ex situ* treatment system for contaminated groundwater. These are common remedial construction activities that pose minimal risk to site workers and the surrounding environment, though the treatment facility would need to be sited, preferably on the former CDE facility. Alternative GW-4 would involve controlled blasting in an urban setting for construction of a PRB. Blasting has the potential to impact surrounding structures and utilities, which presents greater short-term risks in comparison to the other alternatives. Alternative GW-5 involves construction in the brook similar to, and presumably at the same time as the sediment removal work, although limited bedrock removal would likely be necessary. Based upon EPA's experience with the top surface of the bedrock during the OU2 remedial action, typical excavation equipment can be used to scrape off the bedrock surface that would need to be removed to install the reactive cap.

Other activities required as part of implementation of Alternatives GW-3, GW-4, and GW-5 would pose risks similar to those of remediation/construction projects of the same size and scope. These risks would include the potential for exposure to low levels of a range of contaminants, working on or around heavy construction equipment, working in water/wet environments, disruption of wildlife in the brook and in surrounding forested areas, increased construction traffic, impacts to those living or working directly adjacent to the remediation area (noise, odors, lights), and the potential spread of contaminants in the brook during removal of bedrock for Alternatives GW-4 and GW-5.

It is anticipated that these risks could be mitigated through the use of engineering controls, safe work practices, and personal protective equipment.

6. Implementability

Because Alternative GW-1 would not entail any work, it would be easily implemented.

Alternatives GW-2 and GW-3 would present the fewest technical challenges because they comprise monitoring networks and withdrawal systems that are routinely implemented, generally with few problems. The primary implementability hurdle associated with Alternative GW-3 would be securing land for a permanent, long-term treatment works. The treated water is expected to be discharged to surface water, and meeting discharge requirements is not expected to be difficult. Alternative GW-4 is technically more challenging to implement because of the site conditions that must be addressed to construct a deep trench and install the reactive media. Alternative GW-5 is expected to be more technically implementable than Alternative GW-4, even though it requires some bedrock removal from the bed of Bound Brook and the deployment of a reactive cap in the brook.

Both Alternatives GW-4 and GW-5 pose long-term implementability challenges, because the reactive media used to treat the dissolved-phase contaminants will eventually be exhausted and need to be replaced. Under Alternative GW-5, measuring breakthrough would be difficult, because it would entail measuring across a treatment unit placed in a surface water body; however, measuring breakthrough for Alternative GW-4 would be even more challenging, because the bedrock matrix on both sides of the PRB would contain elevated concentrations of the contaminants of concern. Replacing the spent treatment material, whether in the PRB trench or in the streambed, is expected to be challenging; the reactive cap may be less difficult because the cap, which would be installed in overlapping blankets of treatment material, can be more easily accessed for removal and replacement, being at the surface, than the PRB material placed in a 75-foot deep trench.

7. Cost

The costs for the three active GW alternatives are \$23.3 million for Alternative GW-3, \$27.1 million for Alternative GW-4, and \$22.1 million for Alternative GW-5. Capital costs, operation and maintenance costs, and periodic costs were developed for each alternative. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs.

For Alternative GW-3 (hydraulic containment) the largest component of the cost, an estimated present worth of \$15.2 million, would be the O&M of the treatment works. For Alternatives GW-4 and GW-5, the costs for O&M (\$3.8 million and \$3.2 million, respectively), attributable to monitoring performance of the passive treatment operations, would be similar. The costs (\$4.6 million and \$5.4 million, respectively) of periodically replacing the treatment media would also be similar. The long-term O&M and periodic maintenance for the three active remedial alternatives would be needed in perpetuity; a 30-year time frame was used for all these costs, for cost-estimating purposes.

As discussed previously, under the "long-term effectiveness and permanence" and "implementability" criteria, EPA is uncertain how long it will be before breakthrough occurs for Alternatives GW-4 and GW-5. For cost-estimating purposes, it is assumed that one complete replacement of reactive media would occur during the 30-year period. This would certainly be the case if replacement were called for under Alternative GW-4, because replacing only part of the reactive media within the trench is not practical; for Alternative GW-5, it is expected that breakthrough would not occur uniformly, and it would be cost-effective to replace small sections of the reactive cap as needed, rather than replacing the entire cap.

When comparing Alternatives GW-4 and GW-5, a significant difference in the capital costs is from the cost of disposal. Alternative GW-4 requires a larger quantity of bedrock to be removed, and the rock removed from the trench in Alternative GW-4 includes portions of the on-site bedrock, where the rock matrix is saturated with high concentrations of VOCs and PCBs. For cost-estimating purposes, this material is assumed to require disposal at a TCSA or RCRA subtitle C facility. By contrast, the bedrock material scraped from the streambed to allow for installation of the reactive cap as part of Alternative GW-5, while still subject to rock-matrix diffusion, is expected to contain lower concentrations of contaminants and to be acceptable for disposal at a RCRA subtitle D facility. If either of these assumptions is incorrect, then the capital costs of these two alternatives would be closer (either Alternative GW-4 would be less expensive or Alternative GW-5 would be more expensive).

Water Line (WL)

1. Overall Protection of Human Health and the Environment

Alternative WL-1 would not be protective of human health and the environment since it does not include measures to detect or prevent water leaks on a century old waterline that could impact the OU2 soil remedy area. Alternative WL-2 (Water Line Monitoring, Replacement as Necessary) would allow for early detection of a leak but would not prevent a leak or break and the resulting impact on the OU2 soil remedy area and, if already implemented, the OU4 remedy, because overland flow of soils from the former CDE facility would necessarily result in releases to surface water. Alternative WL-3 (Water Line Relocation) would eliminate the potential risk associated with the pipeline crossing the OU2 soil remedy area by relocating it off the former CDE facility property. This alternative provides the greatest protection of human health and the environment by permanently moving the water line.

2. Compliance with ARARs

Under current conditions, all of the alternatives would comply with ARARs. Alternative WL-1 has the greatest potential to adversely impact water quality ARARs since a future leak is likely and may not be detected in a timely manner. Alternative WL-2 would allow for early detection and response to future leaks, and may prevent future violations of water quality ARARs, depending on the severity of the leak and the speed of detection/response. Alternative WL-3 would prevent future violations of water quality criteria; construction activities would need to address water quality and floodplain ARARs.

3. Long-Term Effectiveness and Permanence

Alternative WL-1, the No Action Alternative, is neither effective in the long-term nor a permanent solution to preventing potential leaks in the pipeline from impacting the OU2 soil remedy area. Alternative WL-2 would provide a method of detecting leaks, allowing for a more rapid response to a leak; however, it would do nothing to stop leaks from occurring and impacting the OU2 soil remedy area or OU4; neither would it protect against a catastrophic leak (*i.e.*, a burst pipe which would result in recontaminating the brook and requiring an additional remediation event). Alternative WL-3 would be effective over the long-term and would present a permanent solution because it removes the water line from the former CDE facility property.

4. Reduction of Toxicity, Mobility, and Volume through Treatment

None of the alternatives provide treatment, or have any impact on the toxicity, mobility or volume of contaminants in the OU4 Study Area, or elsewhere.

5. Short-Term Effectiveness

Alternative WL-1 does not present short-term risks to site workers or the community because it does not include any construction activities. Alternatives WL-2 and WL-3 would present similar risks to remediation/construction projects of similar size and scope, such as the potential for exposure to low levels of a range of contaminants, working on or around heavy construction equipment, and increased construction traffic on roads near the former CDE facility.

The scale of the risk would be comparatively higher for Alternative WL-3 because it entails a larger construction project. Alternative WL-3 would present the following additional risks and impacts: work around an active rail line, disruption of wildlife in the brook and in surrounding wetland/floodplain area, the potential spread of contaminants in the brook, and working in water/wet environments. In all cases, it is anticipated that these risks could be mitigated through the use of engineering controls, safe work practices, and PPE.

6. Implementability

Because Alternative WL-1 would not entail any work, it would be easily implemented. Both Alternatives WL-2 and WL-3 are based on industry-standard construction techniques and are feasible to implement; however, Alternative WL-3 is technically and administratively more complex due to the extensive amount of work that would be performed in the public ROW, the need to jack and bore under two active rail lines, the need to cross under Bound Brook, and modifications to the existing water distribution system. The majority of work for Alternative WL-2 would be conducted on the former CDE facility property, which would limit the impact on the public; however, it would require the cooperation of the property owners/developers, and the replacement water line may also affect the rail line. Under Alternative WL-2, if the monitoring program were to alert EPA and NJAW, the water line owner, of an imminent failure, NJAW and EPA would work together to quickly resolve the issue; a temporary pipeline and booster systems would need to be constructed elsewhere to allow the pipeline to be shut down. The water line would then be replaced with a new line parallel to the old water line.

7. Cost

The present value for WL-2 is $4.7 million, and for Alternative WL-3, $8.9 million. The cost of Alternative WL-2 includes replacement of the water line ten years into the future; if replacement were needed earlier or later, the costs could be higher or lower. Capital costs, operation and maintenance costs, and monitoring costs were developed for each alternative. The costs for each alternative were developed on the basis of preliminary engineering designs to meet the RAOs.

The remaining two criteria were considered for all alternatives per component of the OU4 remedy.

8. State acceptance

NJDEP is expected to concur with EPA's preferred alternatives.

9. Community acceptance

Community acceptance of the preferred alternatives will be evaluated after the public comment period ends.

Principal Threat Waste

The remedial alternatives being evaluated for the site would address - soil and capacitor debris contaminated at concentrations greater than 100 mg/kg PCBs as principal threats at the site.

PREFERRED ALTERNATIVE

EPA's Preferred Alternatives for the site are:

Sediments and Floodplain Soils (SS):
Alternative SS-2, Excavation/Dredging of Sediments and Floodplain Soils with Monitored Natural Recovery.

Capacitor Debris (CD):
Alternative CD-4, Excavation and Off-site Disposal of Capacitor Debris.

Groundwater Discharge to Surface Water (GW):
Alternative GW-3, Hydraulic Control of Groundwater.

Water Line Replacement (WL):
Alternative WL-3, Water Line Replacement in New Easement.

In addition, the agency would invoke an ARAR waiver for the area of groundwater addressed by this action.

The preference for the Preferred Alternatives are based upon these factors:

Soils and Sediments Alternatives

While Alternatives SS-2 and SS-3 would similarly remediate sediments with concentrations that exceed 1 mg/kg PCBs, and allow MNR to further reduce sediment and surface water concentrations to levels that would allow fish to recover to protective levels, Alternative SS-2, which would remove floodplain soils within the Bound Brook corridor in excess of 1 mg/kg of PCBs, would also be more protective over the long term. Under current conditions, Bound Brook sediments are generally more contaminated than the neighboring floodplains. The floodplain is a depositional area relative to most of the stream channel, and probably does not act as a significant source of PCBs to the sediments under current conditions. However, under Alternative SS-3, which would remove the contaminated sediments above 1 mg/kg PCBs but also leave higher PCB concentrations in part of the floodplain under a cap, and rely upon natural recovery to reach a protective value for fish consumption, even a temporary breech of capped floodplain soils could allow these soils to recontaminate the sediments. Of the 17 acres of floodplains where capping is feasible, cost-effectiveness would be achieved by building up a cap above the current surface contour, which would face technical and administrative challenges, discussed above, that may make it not implementable as currently developed in the FS (with one foot of surface removal to make way for two feet of capping). If excavating enough material prior to capping to maintain the current ground surface were required, Alternative SS-3 would not be substantially different in cost than Alternative SS-2. Capping in New Market Pond may also be subject to similar limitations.

The SS alternatives conservatively assume that the contamination will consistently be found as deep as three feet bgs. While this is a reasonable assumption in an FS, the RI data indicate that most of the contamination is in the top one to two feet of the floodplains, which are the depths that would need to be excavated to make room for capping under Alternative SS-3. If this is the case, Alternative SS-2 would be more implementable than Alternative SS-3 because of the technical challenges of capping a relatively thin layer of contamination and maintaining that cap in perpetuity.

Surface water quality would be improved by the removal of the contaminant sources and sediments with PCB concentrations in excess of 1 mg/kg, including the cleaning out of the existing silt trap located upstream of New Market Pond. Future maintenance of this silt trap may prove advantageous for long-term improvement of fish tissue, as this device (and New Market Pond) have proved to be effective at collecting contaminated sediments and are likely to do so in the future

Capacitor Debris Alternatives

Based upon EPA's earlier experience with treating site wastes through LTTD, using this treatment method for the CD area would face technical challenges, impairing implementability. EPA's preference for off-site disposal is primarily based upon these likely implementation difficulties, and cost.

Groundwater Alternatives

EPA's preference for hydraulic containment of the groundwater is based upon an expectation that this proven technology will be more reliable than the reactive cap, and can be implemented more quickly (the reactive cap cannot be installed until the sediment remedy is being implemented for that reach of the brook). Hydraulic control is also preferred over the PRB because it has the capacity to treat all the contaminant mass that currently reaches the brook, whereas the PRB could only address contaminant mass that passes through the treatment zone flowing from the south.

EPA is proposing to extend the ARAR waiver for the federal and state drinking water and groundwater standards (MCLs and NJ GQC) previously invoked for groundwater at this site due to technical impracticability to include the area of groundwater that discharges to Bound Brook, see figure 3.

Water Line Alternatives

The preference to move the water line is based upon an expectation that the existing line will eventually fail and, at the time of failure it would need to be replaced either in the same location as contemplated in Alternative WL-2, or in a new route as contemplated as in Alternative WL-3. The potential for catastrophic failure, which would harm the protectiveness of the OU2 remedy, and, if implemented, the OU4 remedy, is not worth the deferred cost. In addition, the opportunity to install a new water line under Bound Brook in conjunction with the sediment excavation is expected to be beneficial to the overall cost-effectiveness of the remedy.

The Preferred Alternatives provide the best balance of trade-offs among the alternatives with respect to the evaluation criteria. Based on the information available at this time, EPA believes the Preferred Alternatives will be protective of human health and the environment, and will comply with ARARs to the extent practicable. The Preferred Alternatives would meet the statutory preference for the use of remedies that involve treatment as a principal element.

COMMUNITY PARTICIPATION

EPA encourages the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there.

The dates for the public comment period, the date, location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan. Written comments on the Proposed Plan should be addressed to the Remedial Project Manager Mark Austin at the address below.

EPA Region 2 has designated a public liaison as a point-of-contact for the community concerns and questions about the federal Superfund program in New York, New Jersey, Puerto Rico, and the U.S. Virgin Islands. To support this effort, the Agency has established a 24-hour, toll-free number that the public can call to request information, express their concerns, or register complaints about Superfund.

For further information on the Cornell –Dubilier Electronics Superfund site, please contact:

Mark Austin
Remedial Project Manager
(212) 637-3954
austin.mark@epa.gov

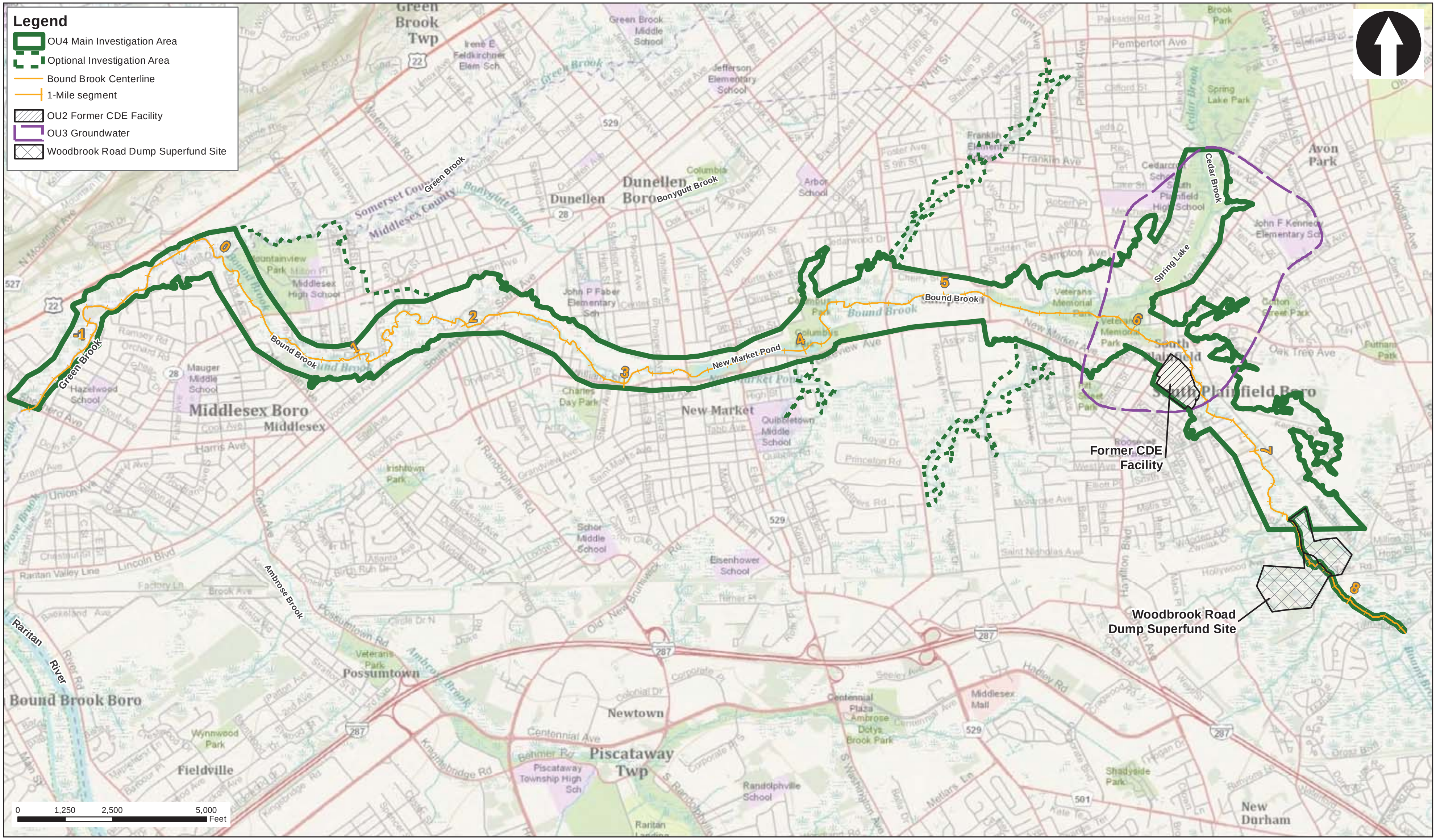
Patricia Seppi
Community Relations Coordinator
(212) 637-3639
seppi.patricia@epa.gov

Written comments on this Proposed Plan should be addressed to Mr. Austin.

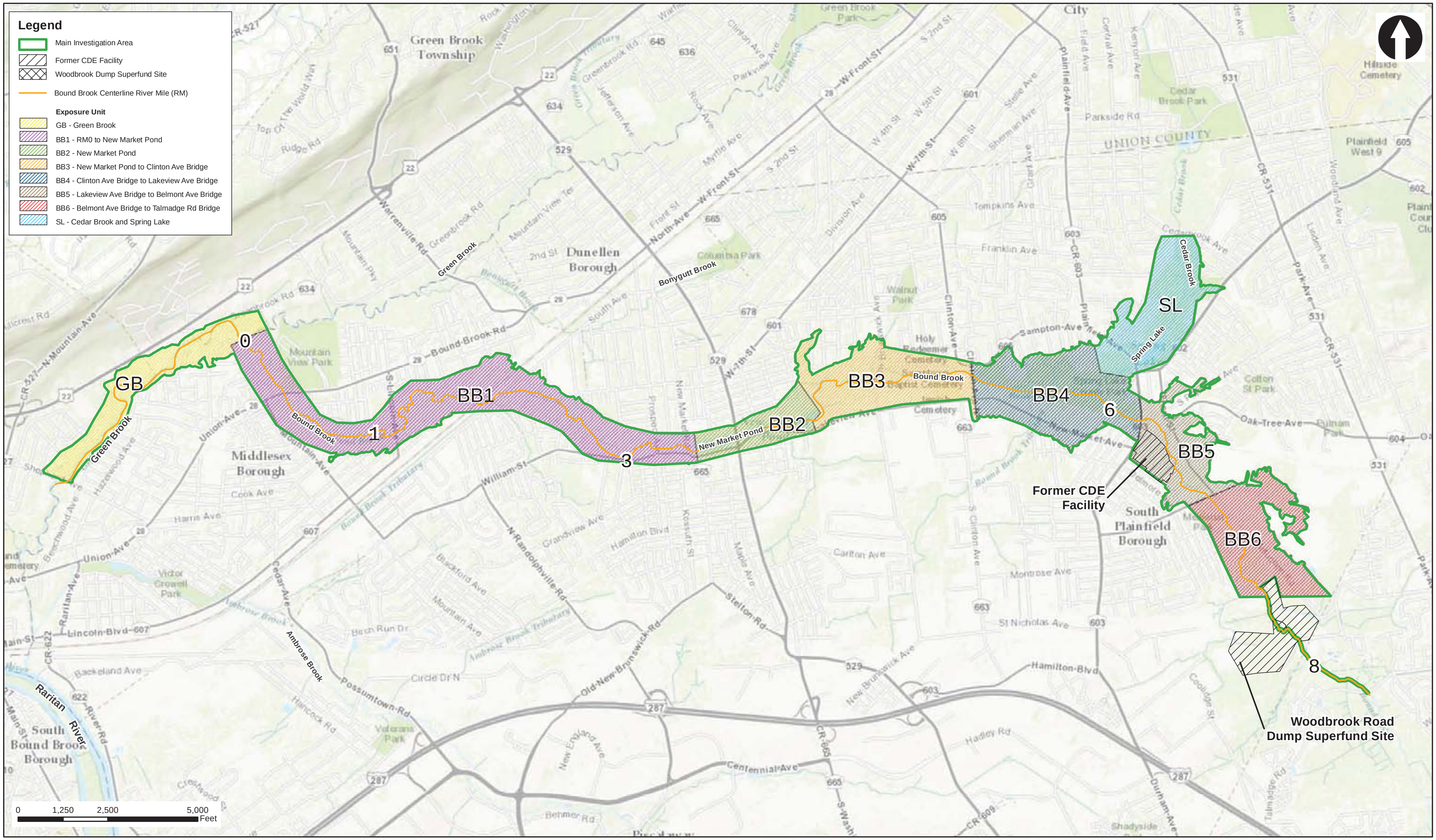
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

The public liaison for EPA Region 2 is:
George H. Zachos Regional Public Liaison
Toll-free (888) 283-7626, or (732) 321-6621

U.S. EPA Region 2
2890 Woodbridge Avenue, MS-211
Edison, New Jersey 08837-3679



	Cornell-Dubilier Electronics Superfund Site South Plainfield, New Jersey	**Operable Units (OU2, OU3, and OU4)** **of the Cornell-Dubilier Electronics Superfund Site** *Bound Brook OU4 RI/FS*	2013 Figure 1



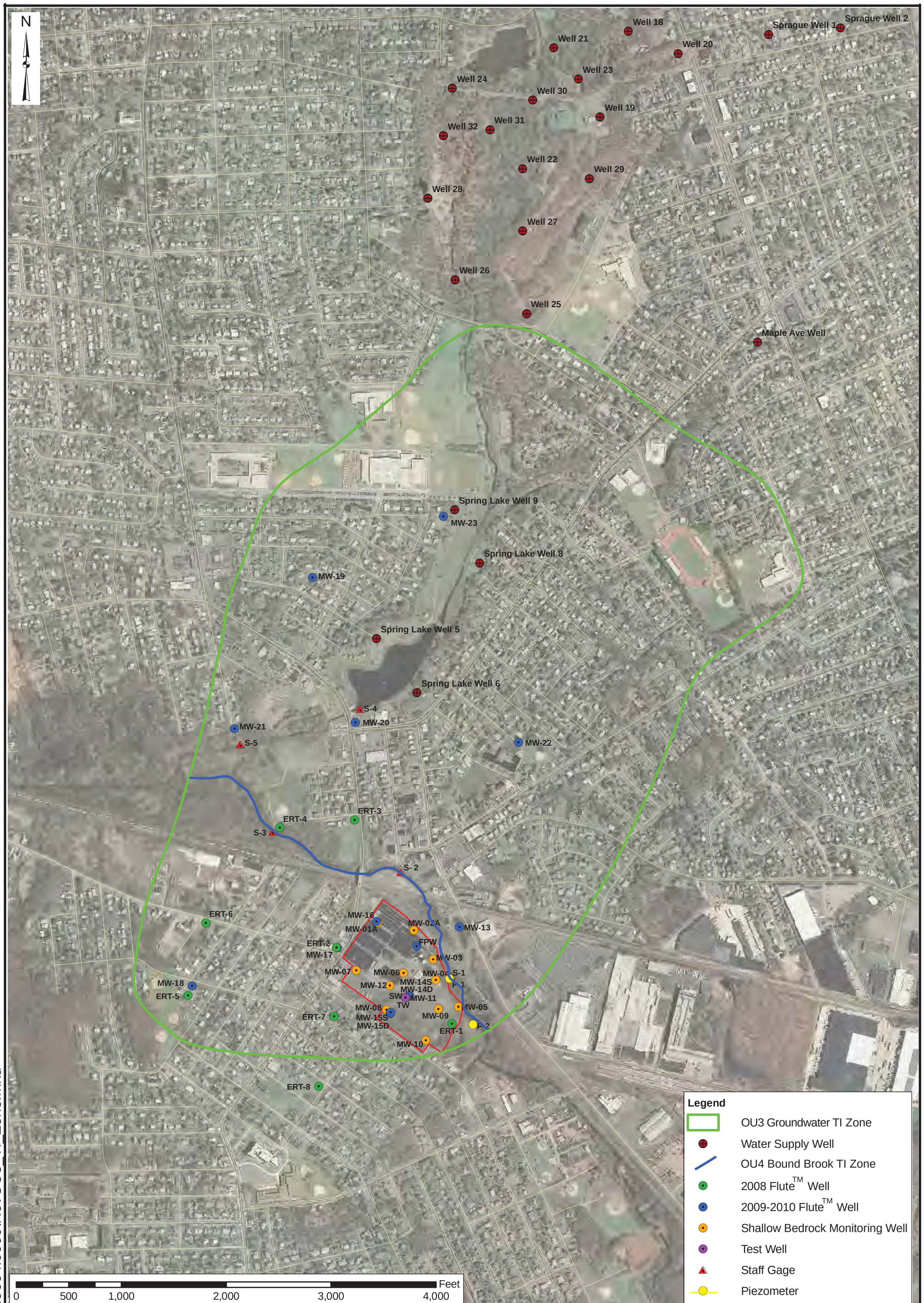
Cornell-Dubilier Electronics
Superfund Site
South Plainfield, New Jersey

Exposure Units for the OU4 Risk Assessment

Bound Brook OU4 RI/FS

2014

Figure 2



ARCADIS MALCOLM PIRNIE

Cornell-Dubilier Electronics Superfund Site

South Plainfield, New Jersey

OU4 TI ZONE

Figure 3

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Table 1
SUMMARY OF ECOLOGICAL RISKS[1]
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Receptor		Line of Evidence		Exposure Unit							
				EU BG	EU BB1	EU BB2	EU BB3	EU BB4	EU BB5	EU BB6	EU SL
Benthic Invertebrates		Surface sediment concentrations			Total PCBs	Total PCBs	Total PCBs	Total PCBs	Vinyl chloride Total PCBs	Total PCBs	
		Porewater concentrations [2]							cis-1,2-DCE Vinyl chloride Total PCBs		
		Tissue concentrations	Asiatic clam	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs		Total PCBs
			Crayfish							Total PCBs	
		Sediment Toxicity		N/A	Toxic	Toxic	Toxic	N/A	Toxic	N/A	N/A
		PCB Bioaccumulation		N/A	Bioavailable			N/A	Bioavailable	N/A	N/A
Aquatic Life		Surface water concentrations [3]		Total PCBs							
		Porewater concentrations [2]							*cis* -1,2-DCE Vinyl chloride Total PCBs		
		Tissue concentrations	Predatory fish	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs
			Bottom-feeding fish	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs
			Predatory fish eggs								
			Bottom-feeding fish eggs								
		Fish Condition Factor		NA	Good	Good	Good	Good	Good	Good	Good
Semi-Aquatic Wildlife Receptors	Herbivorous Birds	Food web exposure	Wood duck								
	Insectivorous Birds	Food web exposure	Mallard								
			Red-winged blackbird								
	Piscivorous Birds	Food web exposure	Great blue heron	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs		
			Belted kingfisher	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs TCDD TEQ (PCBs)	Total PCBs	Total PCBs
		Fish egg concentrations	Based on predatory fish	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)
			Based on bottom-feeding fish	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs
	Herbivorous Mammals	Food web exposure	Muskrat								
	Insectivorous Mammals	Food web exposure	Raccoon								
			Little brown bat	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)	TCDD TEQ (PCBs)		TCDD TEQ (PCBs)
	Piscivorous Mammals	Food web exposure	American mink	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs TCDD TEQ (PCBs)	Total PCBs	Total PCBs TCDD TEQ (PCBs)	Total PCBs	Total PCBs
Terrestrial Plants and Invertebrates	Plants	Surface soil concentrations						Total PCBs	Total PCBs	Total PCBs	NA
	Soil Invertebrates	Surface soil concentrations						Total PCBs	Total PCBs	Total PCBs	NA
		PCB Bioaccumulation		N/A		N/A	N/A	Bioavailable	N/A	N/A	N/A
Terrestrial Wildlife Receptors	Wildlife	Surface soil concentrations		Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	Total PCBs	NA
	Herbivorous Birds	Food web exposure	Mourning dove								NA
	Insectivorous Birds	Food web exposure	American robin				Total PCBs	Total PCBs	Total PCBs	Total PCBs	NA
	Carnivorous Birds	Food web exposure	Red-tailed hawk								NA
	Herbivorous Mammals	Food web exposure	Eastern gray squirrel								NA
	Insectivorous Mammals	Food web exposure	Short-tailed Shrew					Total PCBs	Total PCBs	Total PCBs	NA
	Carnivorous Mammals	Food web exposure	Red fox								NA

Notes:
1. For site-related contaminants (*i.e.* , PCBs and chlorinated solvents) only
2. Although porewater samples were only collected from EUs BB4, BB5, and BB6, exceedances occurred at EU BB5
3. Surface water data were evaluated system-wide
cis -1,2-DCE = *cis* -1,2-dichloroethene
NA = not available
N/A = not applicable

Exposure Unit (EU) Abbreviations:
GB = Green Brook (RM -1.58 to 0)
BB1 = Bound Brook (RM 0 to 3.43)
BB2 = Bound Brook (RM 3.43 to 4.09)
BB3 = Bound Brook (RM 4.09 to 5.22)
BB4 = Bound Brook (RM 5.22 to RM 6.18)
BB5 = Bound Brook (RM 6.18 to 6.82)
BB6 = Bound Brook (RM 6.82 to RM 8.31)
SL = Spring Lake

Table 2
COMPARATIVE ANALYSIS OF ALTERNATIVE COSTS
Cornell-Dubilier Electronics Superfund Site
Feasibility Study

Alt.	Description	Capital Costs	Present Value of Capital Costs	Present Value of O&M	Present Value of Periodic Costs	Total Present Value
Sediment and Floodplain Soil RAA						
SS-1	No Action	$ -	$ -	$ -	$ -	$ -
SS-2	Excavation/Dredging of Sediments and Soils	$ 187,300,000	$ 177,600,000	$ -	$ 30,000	$ 177,600,000
SS-3	Excavation/Dredging of Sediment, Limited Excavation and Capping of Floodplain Soil, Limited Dredging and Capping in New Market Pond, and MNR of Depositional Areas	$ 165,700,000	$ 157,100,000	$ 638,000	$ 30,000	$ 157,800,000
Capacitor Debris RAA						
CD-1	No Action	$ -	$ -	$ -		$ -
CD-2	Surface Excavation, Capping, and Containment	$ 20,000,000	$ 20,000,000	$ 550,000	$ 50,000	$ 20,600,000
CD-3	Full Depth Excavation, Thermal Desorption, and On-Site Burial of Treated Materials	$ 42,400,000	$ 42,400,000	$ -	$ -	$ 42,400,000
CD-4	Full Depth Excavation and Off-Site Disposal	$ 32,800,000	$ 32,800,000	$ -	$ -	$ 32,800,000
Groundwater Discharge to Surface Water RAA						
GW-1	No Action	$ -	$ -	$ -	$ -	$ -
GW-2	Monitoring and Institutional Controls	$ 1,900,000	$ 1,900,000	$ 10,270,000	$ -	$ 12,200,000
GW-3	Hydraulic Control of Groundwater	$ 8,100,000	$ 8,100,000	$ 15,160,000	$ -	$ 23,300,000
GW-4	Permeable Reactive Barrier	$ 18,700,000	$ 18,700,000	$ 3,780,000	$ 4,580,000	$ 27,100,000
GW-5	Reactive Cap	$ 13,500,000	$ 13,500,000	$ 3,230,000	$ 5,370,000	$ 22,100,000
Water Line RAA						
WL-1	No Action	$ -	$ -	$ -	$ -	$ -
WL-2	Water Line Monitoring System, Replacement in Existing Easement as Necessary	$ 500,000	$ 500,000	$ 100,000	$ 4,100,000	$ 4,700,000
WL-3	Replace Pipeline in New ROW	$ 8,900,000	$ 8,900,000	$ -	$ -	$ 8,900,000

Notes:

1. Estimated costs based on an ENR CCI of 9664 (January 2014). All costs are in constant (non-inflationary) dollars. The Present Value was calculated based on discount rate of 7%..

2. A 30-year operating period was assumed for the groundwater control alternatives although it is anticipated that some of the systems will need to operate for decades, if not longer, to ensure compliance with ARARs. For Alternative GW-3, the treatment plant equipment would require replacement in year 30; for Alternative GW-4, the reactive media in the PRB would require replacement in year 15 and in year 30; and for Alternative GW-5, the reactive cap media would require replacement in year 15 and in year 30. Actual time frames may vary.

3. O&M costs associated with the water line are expected to be borne by NJAW as part of normal operating costs and are not included in this estimate. Under Alternative WL-2, leakage monitoring costs are included in the cost estimate. Initial costs would include installation of a leak detection system and SCADA warning system. Pipeline replacement was assumed to occur in year 10.

Attachment B
Public Notice

SPORTS

Last Saturday at Perth Amboy, Jose Guardado helps South Plainfield to the victory with four goals along with one goal from Italo Cardoso. Final score: 5-1. –Photo courtesy of Hector Casteblanco

Golden Tee RESULTS

Frank Chirichillo and Vic Buzzo won the Golden Tee Blind Partner Golf Tournament at the Plainfield West Nine Golf Club. Wayne Lavender and Lloyd Dowdy came in second. Vince Powers was closest to the pin and Frank Fidel and Vince Buzzo tied for fewest putts.

Tournaments are held every Wednesday and open to all golfers. Tee times are between 7:30 and 9 a.m. The $20 fee includes green fees, golf cart and prizes.

For information, call PGA Professional Bill Castner at (908) 769-3672.

8U Titans Win Slam Tournaments

(Continued from previous page)

Robbie Krovatin started the fifth inning rally with a 1-out infield single, followed by walks to Nicholas Irizarry and Joey Padovano. Matthew Ciullo had a great 10 pitch at bat, but made the second out. Aldo Pigna scored Krovatin and tied the game with a 2-out single to left field.

Chase Donovan reached on an infield single, scoring Irizarry with the go-ahead run, followed by a walk to Nicholas Campagna, scoring Padovano. Anthony DeLisa singled in Pigna and Donovan to cap off a five-run inning.

Nicholas Campagna, Matthew Nigro and Zachary Robinson also had hits in the big game. Donovan and Pigna each pitched great for the Titans, holding Woodbridge to one run. Good defensive performances were turned in by Nigro, DeLisa, Ciullo and Brian Potts.

The boys did a tremendous job throughout the spring and summer, going 34-9-2. They had many accomplishments, including: placing second in USABL Spring League; placing second in North Edison Memorial Day Tournament; placing second in Districts; placing first in Colonia; played in the semifinals in the states; and placed first in Woodbridge.

Coach Pigna, Coach Campagna and Coach Robinson said they were extremely proud of the way the boys battled, learned and improved throughout the season.

They also wanted to thank the Titan parents for all of their support and time throughout the spring and summer.

–Submitted by Aldo Pigna

OPINION — South Plainfield Democrats

Voters Want Discussion of Issues, Shutdown of Attacks

The opinions expressed here are those solely expressed by the organizations submitting the articles. They do not necessarily reflect the opinion of the publisher; nor do we attest to their accuracy.

Chrissy Buteas, candidate for mayor, and borough council candidates Joe Lambert and Jeff Seider are echoing the growing sentiment of South Plainfield residents that "enough is enough" of the endless Republican personal attacks, saying voters are clamoring for an honest discussion of issues.

They said the Republicans' overreach in trying to personally vilify and destroy their political opponents is backfiring, as more and more voters are tiring of the acidic, scorched-earth campaign being run by Mayor Matt Anesh. Lost in the Republican attacks are any meaningful discussions of the issues facing South Plainfield's families.

"As we have met with voters over the past week, we have heard the same thing again and again about the endless Republican personal attacks: Enough is enough!" said Buteas. "No matter how unacceptable the conduct in question or how strongly we express disappointment, there should be a level of common decency and humanity that must be shown. Then we need to turn the page instead of piling on. That's the frustration we hear from voters. They're frustrated that the Republicans are single-mindedly focused on destroying people rather than talking about the future of South Plainfield. And so am I."

Buteas, Lambert and Seider said they will continue to discuss their plans for fixing traffic problems, making public safety a real priority and honestly dealing with the fiscal issues and ending the gimmicks that are threatening local finances. They said those are the issues voters are asking to be their focus.

"The endless attacks, the Republicans hunger to not only destroy someone's reputation locally but nationally, the seemingly endless insults and piling-on are not what South Plainfield or its residents want or need," said Lambert. "But it's what South Plainfield will continue to get under Mayor Anesh and the Republicans. November 4 isn't just about moving South Plainfield forward, it's about a choice between a government that listens to the people or one that will stop at nothing to hold power."

Buteas, Lambert and Seider also said the Republicans' tactics are "poisoning the well," and will prevent qualified, committed residents from wanting to run for office or seek a public position, for fear that any past miscue–no matter how long ago–will be aired in a personal attack which has nothing to do with the person they've become or the type of leader they would be.

The Democratic team said the Republicans are walking on a very slippery slope, and should look within their own ranks before attacking others.

"As it's been said many times before, those in glass houses shouldn't throw stones, even Republicans in South Plainfield," said Seider. "The Republicans' behavior this year is an example of why people have come to hate politics. When residents want answers and ideas to the challenges facing our community, they're instead presented with nothing. That kind of politics may be considered okay in Washington, but it goes against everything we have come to love about South Plainfield."

Buteas, Lambert and Seider said they are committed to continuing to talk to voters about the significant quality of life issues facing South Plainfield.

"Just like the borough's residents, our sole focus is South Plainfield's future," said Buteas.

OPINION — South Plainfield Republicans

Flat Tax Rate This Year No Accident

Pointing to this year's flat tax rate, Mayor Matt Anesh said this week that his team will continue to hold the line on taxes if reelected.

The part of the tax bill controlled by the council saw no increase this year and is down $88 since 2009, when Democrats were in control.

But according to the mayor's team, that's still not good enough.

"We're working hard to hold the line for 2015," said Council President Alex Barletta, candidate for re-election. "We know families are still suffering from the recession.

Councilman Derryck White is also on the ballot. White, who heads the town's economic development team, said a big factor in holding down taxes is business growth.

"Every time we bring in a new business, it helps offset what residents pay," White explained.

Anesh said the flat tax rate is no accident. When asked, he pointed to contract savings as an example of how his team is holding the line.

"We negotiated below the two-percent state cap," the mayor said. "We also eliminated longevity and reduced starting salaries for certain jobs."

Unfortunately, while the mayor and council are holding the line, the Democrats at the county level have been unable to do the same. County taxes are up $69 this year and $291 since 2009.

"I wish the county Democrats would adopt some of the same practices that are working in South Plainfield," said the mayor.

This year's zero tax increase is also a marked contrast to when the local Democrats were in control. In 2009, when mayoral candidate Chrissy Buteas was on the council, she voted to raise taxes $404. And that very same year she voted to raise her own salary.

"Buteas promised not to raise taxes during her 2008 campaign, but she did," said Councilman Rob Bengivenga, who faced Buteas that year. "Voting to give herself a raise added insult to injury."

Anesh said the key difference between his team and the other side is business experience. He and his running mates have finance and management experience. By contrast, Buteas has a lobbying background. "She and her running mates don't have the experience to control costs."

Anesh said this year's election boils down to a single question: Do you think South Plainfield is heading in the right direction? "If you do," Anesh said, "we are asking for your support."

EPA INVITES PUBLIC COMMENT ON A PROPOSED PLAN TO CLEAN UP THE CORNELL-DUBILIER ELECTRONICS, INC. SUPERFUND SITE IN SOUTH PLAINFIELD, NEW JERSEY

The U.S. Environmental Protection Agency (EPA) announces the opening of a 45-day public comment period on a cleanup proposal to address Bound Brook contaminated sediments, floodplain soils and groundwater contaminated with polychlorinated biphenyls associated with the Cornell-Dubilier Electronics, Inc. Superfund Site in So. Plainfield, NJ.

Public comment on the preferred cleanup plan, and other cleanup alternatives that were considered, begins on Sept. 30, 2014 and ends on Nov. 14, 2014. The EPA encourages the public to attend a public meeting on Tuesday, Oct. 21, 2014 at 7 p.m. at the South Plainfield Senior Center, 90 Maple Ave., South Plainfield, New Jersey 07080.

The Proposed Plan is available at http://www.epa.gov/region2/superfund/npl/cornell or you can call EPA's Community Involvement Coordinator, Pat Seppi, at (212) 637-3679 and request a copy of the plan.

Written comments on the Proposed Plan, postmarked no later than COB Nov. 14, 2014 may be mailed to Mark Austin, EPA Project Manager, at U.S. EPA, 290 Broadway, 19th Floor, New York, NY 10007-1866 or emailed no later than COB Nov.14, 2014 to austin.mark@epa.gov

The Administrative Record file, containing the documents used or relied on in developing the alternatives and preferred cleanup plan, is available for public review at the following information repositories:

South Plainfield Public Library located at 2484 Plainfield Avenue, South Plainfield, New Jersey 07080
(908) 754-7885

U.S. EPA Region 2, Superfund Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866
(212) 637-4308, Mon. - Fri., 9am - 5pm

Attachment C
Public Meeting Transcripts

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

- -x

CORNELL-DUBILIER SUPERFUND SITE

PUBLIC MEETING

- -x

South Plainfield Senior Center
90 Maple Avenue
South Plainfield, New Jersey

October 21, 2014
7:00 p.m.

PRESENTERS:

PAT SEPPI,
Community Involvement Coordinator

MARK AUSTIN,
Remedial Project Manager

CHLOE METZ,
Human Health Risk Assessor

ADDITIONAL EPA REPRESENTATIVES:

JOHN PRINCE, Senior Manager

RICH PUVOGEL, Section Chief

SARAH FLANAGAN, Site Attorney

DIEGO GARCIA, Remedial Project Manager

REBECCA OFRANE, Human Health Risk Assessor

DIANA CUTT, Hydrogeologist

MINDY PENSAK, Ecological Risk Assessor

LEN WARNER, LOUIS BERGER (EPA Lead Contractor)

MS. SEPPI: Good evening, everyone. On behalf of the EPA, I thank you for attending our meeting to discuss the Proposed Plan for the cleanup of the Cornell-Dubilier Electronics Superfund Site OU4, Operable Unit 4, the Bound Brook.

My name is Pat Seppi. I'm the Community Liaison for the site. And I'd like to have my colleagues stand up and introduce themselves and let you know how they are working on this site also.

MR. AUSTIN: Mark Austin. I'm the Project Manager for the site.

MR. PUVOGEL: Rich Puvogel. I'm a Section Chief for Mark Austin's group at EPA.

MS. SEPPI: John?

MR. PRINCE: I'm John Prince. I'm a Senior Manager in the Superfund program.

And thank you all for coming.

MS. SEPPI: Mindy?

MS. PENSAK: Hi. I'm Mindy

Pensak. I'm an Ecological Risk Assessor with the Superfund program.

MS. SEPPI: Chloe?

MS. METZ: Hi. I'm Chloe Metz. I'm a Human Health Risk Assessor for the Superfund program.

MS. SEPPI: And Sarah?

MS. FLANAGAN: I'm Sarah Flanagan, and I'm the Site Attorney.

MS. SEPPI: Diego?

MR. GARCIA: I'm Diego Garcia, Project Manager also. I'm responsible for three of the four operable units that we'll be talking about tonight.

MS. SEPPI: And Len?

MR. WARNER: Hi. I'm Len Warner from Louis Berger. We're the EPA contractor, and our staff collected most of the samples.

MS. SEPPI: Our Proposed Plan requirement is that we have a public meeting in the middle of the comment period to give you an opportunity to comment on the plan and, also, ask any questions that you might have.

So, the comment period started on September 30 and it will close on November 14 close of business. So, tonight we'll have all your comments recorded. We have Linda Marino, our stenographer, here, so your comments will all be on the record.

If, however, you decide after the meeting tonight that you still have comments that you would like to submit, on the last page of the Proposed Plan is Mark's address and his e-mail address, and you can certainly send those comments to him until the end of the comment period, which, as I said, is November 14.

So, the next step in the Superfund process -- we're at the Proposed Plan stage now -- is what we call the Record of Decision. That's our legally binding document that details the cleanup that we have chosen.

Now, that Record of Decision will be issued once we take a look at all the comments. Those comments will then be taken and put into what's called a Responsiveness Summary, and that's an addendum to the Record of Decision.

So, all the comments, whether they're verbal or written, will be answered and part of that Responsiveness Summary.

There are some seats up here if you want, in the front, if you don't mind sitting in the front.

This is a complicated site. Anybody who's read the Proposed Plan will understand that. We have tried to keep the presentation as short as possible and that way we can leave as much time as we need for questions and answers.

I do have a couple requests.

If you haven't already done so, if you would sign in in the back, we'd appreciate that. We try to keep a running e-mail list.

This is the hard one: We would appreciate it if you could keep your comments or questions until the end of the presentation because what happens is a lot of times those comments or questions will be answered in the presentation, and then we sometimes will get off track. So, I know that's difficult, but if we could keep on track, that would really be helpful and we'll get out of here a lot earlier, I would think.

And when you do come up, I ask that you give your name so Linda will have it for the record so that when we have the transcript, all that information will be available.

And that's all I really have. Before we get started with the presentation and I turn it over to Mark, Congressman Pallone is here, and he asked if he could make some remarks.

Congressman?

CONGRESSMAN PALLONE: Thank you, Pat.

And I'll be very brief. I am going to try to stay for the whole time, but I don't know if I can.

I just wanted to say I'm really pleased. I think this is at least the second time that I've been at one of your hearings on this site, and I am very pleased that you are moving forward with a comprehensive plan.

I know there have been some concerns. I was talking to Bob Spiegel of Edison Wetlands Coalition about the groundwater, and I want to hear what Bob has to say. He kind of explained it to me a little bit.

And, obviously, we'd all like to see the groundwater addressed as much as possible, as comprehensively as possible. So, I am interested in what Bob has to say in particular about that.

The only other thing I wanted to point out, though, and I always say this at any Superfund hearing: We need a comprehensive Superfund program.

And right now, it suffers from lack of funding. So, the only way that we pay for these cleanups is if there is a Responsible Party, when we go after the Responsible Party. But if there isn't, then we have to use general revenue, which is your tax dollars, to pay for it.

The actual Superfund trust or Superfund, if you will, doesn't really exist anymore. It hasn't for a number of years because it ran out of money.

And it was paid for with a tax on oil and chemical -- petroleum and chemical industry. And I'd like to see that. I've introduced legislation that would put it back into place so we actually have a Superfund that was paid for by polluters rather than taxpayers.

So, I ask everybody to keep that in mind because when we ask for as comprehensive cleanup as possible, it should be based on whatever money is available, not have to be appropriated every year.

But thank you, really, for what you're doing. I like your plan in general, but I do want to hear more about what Bob says in terms of the groundwater.

Thank you, Pat.

MS. SEPPI: Thank you, Congressman. We appreciate your support.

So, I'd like to turn this over to Mark Austin now, and he'll start the presentation.

Can everybody see?

Even in the back, you can see?

Okay.

MR. AUSTIN: Let's see if I can use this.

The former Cornell facility manufactured capacitors and electronic parts. Their operations included the use of PCBs and VOCs.

Due to poor housekeeping, both PCBs and VOCs contaminated the property soil, nearby lands, groundwater, and Bound Brook, which is located along the northernmost boundary of the former facility.

Here, I included a few pictures that show you a few forms of capacitors that we found during our investigation.

In regards to the enforcement history at Cornell, the site was placed on the NPL in 1998 and there are currently four potentially responsible parties named.

I'll try not to go too fast here, but there's a lot of information.

Now, as you may have read, we divide the site up into four phases or operable units identified on this map.

Operable Unit 1, which is not identified on this map, addressed PCP-contaminated soils and interior dust at properties in the vicinity of the facility, the former facility, which is located to the south. The majority of residential properties are there.

For Operable Unit 2, it addressed the PCB-contaminated soil at the former facility located here.

For OU3, it addressed the

site-related groundwater. Here, you can see the extent of the groundwater investigation. The remedy utilized monitoring, institutional controls, and vapor intrusion.

And OU4, which is outlined in the green, is the subject of this meeting.

A brief status of the operable units.

For OU1, out of 135 properties investigated, 34 actions were taken.

For OU2, which has been completed at this point, there was an estimated 107,000 cubic yards of material excavated and the site is now capped.

For OU3, outside of the monitoring aspect currently being implemented, the Record of Decision also required EPA to investigate as part of OU4 what effects, if any, site-related contaminated groundwater had on Bound Brook.

Now let's discuss OU4 a little bit.

To give you an idea of the size

of the study area for OU4, the green line represents the extent. As can be seen here, the study area starts at Talmadge Road, extends from east to west down through South Plainfield, down through New Market Pond in Edison, and eventually ends up in Green Brook. Approximately, all in, a 9-mile study.

Now, as part of the initial framework in planning our investigations, we looked at things like historical discharges of all available previous soil and sediment sampling results, any current ongoing discharges into Bound Brook through either groundwater or surface water bodies, and, importantly, there was an effort to identify other sources located upstream and downstream of the former facility.

I'd like to briefly speak about our investigative efforts.

It should be noted that within the range of Superfund sites, the Cornell OU4 is a comparatively more complex site.

First, it involves contaminated sediment, and we have supplemental guidelines to follow for the investigation of contaminated sediment sites.

Second, there is a concern regarding contaminated groundwater discharge through the bed of Bound Brook which is contributing more contamination to the sediments and surface soil -- surface water, I'm sorry.

Given this level of complexity, we completed several different field investigation programs to help us understand the how and where of contamination in Bound Brook along with the associated risks.

Some program examples to consider.

We probed the sediment throughout the brook to find its depth and texture.

We collected 88 sediment cores

from Bound Brook and its tributaries Green Brook and Cedar Brook downstream of Spring Lake and analyzed 227 samples for those cores.

We advanced 121 floodplain and soil borings and analyzed 242 soil samples.

We collected and analyzed innovative core water samples from 20 locations in Bound Brook where we suspect that contaminated groundwater was discharging.

We also collected surface sediment samples, sediment track samples, surface water samples, and surface soil samples, all planned to help us better understand sediment and groundwater contamination transport and the risk to people and the environment.

On the next slides, we'll summarize what we learned.

By the way, this particular picture is a typical investigation team that we use -- that routinely perform sampling activities in the brook throughout the three, three and a half years.

So, what have we found?

We found that the former facility is a major source of PCB contamination in Bound Brook.

Groundwater is discharging into the brook and is carrying both PCBs and VOCs with it.

Cedar Brook and other tributaries are not considered to be contributing to the contamination in the Bound Brook.

And the contamination generally extends from the site down to the farthest extent of New Market Pond.

Here's a map that shows the average PCB concentrations within the Bound Brook corridor. What is important to note on this slide is that the areas in red and orange, which show averages in excess of ten parts per million PCBs -- actually, the red shows average concentration of 150 parts per million, orange is 10, yellow is between -- right around 1, and the light green are less than .25 parts per million.

What did we find in the floodplain soils?

First of all, just to give you some idea, we are located right around here. This is where this facility is. This is Veterans' Memorial Park. This is Cedar Brook. Bound Brook runs along here.

And I'd like to point out these circles and stars here, here, here, and here. These were a sampling effort done under OU1 for residential properties.

So, as shown, the floodplain soil, with red in this particular map, is soil that's greater than 30 parts per million, the orange 10 to 30, the yellow is 3 to 10, and green is 1 to 3. Gray is nondetect.

This is an old picture of the site. Bound Brook is located along here.

It was previously noted to contain capacitor areas located along Bound Brook banks. That's a previous test pit effort by us.

Our efforts, which are in the circles, they're borings. Confirmation borings have found both capacitors and associated debris confirming what we previously thought.

Through the data from OU3, our sampling efforts confirmed our suspicions: We found that groundwater was discharging to Bound Brook.

This figure and in the following slide is a result of groundwater modeling effort. It shows that groundwater moves to the north, this direction, most likely being influenced by an operating well field to the north but also discharges into Bound Brook.

Please note that the color coding is a way to distinguish where various points of groundwater are discharging or moving. It is not contamination, it's just so that you guys can see how the groundwater is moving. In the next slide, it's even better.

Here's a side view showing the ground surface contamination -- groundwater below ground surface contamination, I'm sorry.

Here's a slide showing how the groundwater is reaching the brook. Some is just moving along to the north, some is eventually reaching Spring Lake, and in between.

And now I will hand it over to Chloe Metz, who will discuss the risks.

MS. METZ: Thank you, Mark.

Hi. I'm Chloe. I'm a Human Health Risk Assessor for the site. I'm going to cover the human health risk as well as the ecological risk. I'll try to do it as clearly as possible, but if there are questions afterwards I'm happy to answer them.

So, what is "risk"?

I think we're all familiar with risk in some way. We take a risk every time we get into a car or eat a doughnut or anything like that. That's a risk. But in Superfund, we look at risk in a very specific context: What contamination might be coming from our site, how might people be exposed to that, and what level of -- what kind of health effects might that have?

We put all that information to come up with the risk, per se, and the risk will give us the justification we need to take an action, to do a cleanup.

So, in developing the human health risk assessment, we have four basic steps. And the steps are very similar on the ecological side.

But we ask questions like: What chemicals are there present at the site?

In this case, as Mark discussed, we have a lot of good evidence to show the distribution of PCBs throughout the length of Bound Brook.

We think about who might be living near the site, who might be working near the site, how might they be coming in contact with any material that might be contaminated.

In this risk assessment for OU4, we looked primarily at recreators who would use the brook for recreational purposes.

To fish: If they consumed those fish, what levels of PCBs were in the fish?

Because there are residential areas around the brook, we also considered the residential exposure. We also looked at, you know, any commercial workers or utility workers, construction workers who might come into contact with the material as well.

The next step is the toxicity assessment. We know there are PCBs in the sediments, in the soil.

How toxic are PCBs? What health effects do they have?

PCBs have both cancer and noncancer health effects, so at what levels are those concentrations of PCBs a concern?

And, finally, at the end, we put that information all together to develop some quantitative estimates of risk from exposure to PCBs.

And in the case of the OU4 risk assessment, what we found is that there's significant cancer and noncancer risk from -- potentially exposed populations through ingestion of fish and shellfish that are contaminated with PCBs.

So, this is throughout the length of our study area, the fish carry a body burden of PCBs. The shellfish as well. If those were to be consumed, they present unacceptable cancer and noncancer risk.

Also, we found that in several areas the floodplain soils also presented unacceptable risk and hazard to a hypothetical child or adult resident. So, this would be coming in contact with soils that have been contaminated as a result of flooding either through touching it, ingesting that material, having it be windblown, having it get on your skin, that kind of thing.

We also found in the immediate vicinity of the site the sediments presented a non -- a direct contact risk for the adolescent recreational sportsman that would be coming in contact with those contaminated sediments.

And one of the figures that Mark already showed was the soil contamination in the floodplains. As he indicated, the red area is where we're seeing the highest level of PCB contamination. And that's also where we saw the highest level of risk from direct contact with those soils.

So, all this information about the risk presented by PCBs in the various media indicate to us that we needed to do something about it.

One thing we did not find: There was no risk from direct contact with surface water. That didn't pose a problem. PCBs don't really like to hang out in water, so that makes some sense.

This is just a brief summary of our ecological risk assessment. Like I said, it follows the same layers of process as the human health.

We have ecological risk assessment guidance for Superfunds. And we performed at this site both a screening level assessment as well as a baseline risk assessment of the ecological receptors.

And our primary conclusions here were that the risk to benthic invertebrates -- that's the clams and crayfish -- from VOCs and PCBs and in core water, which is the water bound up in the sediment, and surface sediments right near the facility presented unacceptable risk.

There was also risk to predatory and bottom-feeding fish to PCBs throughout the site. That tied into our human health risk assessment which showed that consumption of fish from Bound Brook would be a problem as well.

We also saw that there was a risk of adverse health effects to semi-aquatic piscivorous birds -- the birds that eat the fish -- and that was due to dietary exposure to PCBs in surface sediment, as well as insectivorous mammals and birds due to dietary exposure to PCBs in surface soil.

So, with that, I'll turn it back over to Mark.

MR. AUSTIN: Thanks, Chloe.

As we've kind of shown, OU4 is made up of several very different components. Each component will require different approaches due to unique circumstances and complexities.

Listed here, the components include a sediment and floodplain soil effort, a separate capacitor debris component, groundwater component, and action on a 36-inch water line that traverses the former CDE facility that was discovered during work under OU4. There will be more on that in a bit.

To address each previously mentioned component, we developed remedial objectives.

For soil and floodplain soils, the objectives are really to reduce the health and ecological risk for people eating fish, people using the nature trails and the brook, and for the wildlife that utilizes the brook as their home.

I use this figure to identify the site is adjacent Bound Brook, along with the capacitor debris areas which are drawn in yellow, located here.

The objective for the capacitor debris areas is simply to eliminate the PCB sources.

A note about principal threat wastes. Principal threat wastes are simply contaminated materials, like capacitors, associated debris, and impacted soil.

For the groundwater, the effort to prevent contaminated releases of groundwater to surface water is the objective.

In this figure, the yellow and green lines represent measured VOC releases into Bound Brook. The blue diamond show the surface water PCB concentrations in Bound Brook.

The location of the former CDE facility is between River Mile 6.2 and 6.6.

So, the takeaway from this slide is that groundwater discharging along the site boundary has much higher contaminant concentrations than the remaining brook.

Now the water line. During the OU2 efforts which involved excavating and capping, we had discovered a hundred year old 36-inch water main that runs directly through the site and under the brook, noted in red.

Due to its location, there is concern that a future water main break would create a major problem for the OU2 and OU4 remedies. Since there is contaminated soil capped and still remaining onsite, any future breaks not only would be a problem onsite, there is a chance the brook would become recontaminated.

So, our objective here is to ensure that the integrity of both OU2 and OU4 would not be compromised due to a future water main break.

There are a few remediation goals to note.

The floodplain soils and sediments considered for direct contact within Bound Brook, a cleanup goal of one part per million for PCBs is being -- was suggested to be established.

In regards to sediments considered impacting fish consumption, a cleanup goal of 1.25 parts per million.

Turning to the considered remedial alternatives on a component basis.

For sediment and floodplain soils, there were two alternatives considered outside of the no action. Both involve excavating -- excavation and dredging of the brook and New Market Pond. The difference is that one involved complete excavation of the floodplains and the other excavates the top foot of contamination followed by capping.

For the capacitor debris areas, two alternatives were also considered. Both utilized full-depth excavation; however, one involves treatment and burial back onsite where the other ships material offsite for treatment, if necessary, and disposal.

For groundwater, of these noted, Alternatives 3, 4, and 5 were the most promising with proven technology.

3 is often used -- is the often-used pump-and-treat system, 4 involves a very deep wall installed along the site property boundary with

reactive materials that treat the groundwater passing through it, and 5 would involve a cap on the floor of Bound Brook that utilizes the same type of treatment materials.

And, finally, the municipal water line alternative is pretty straightforward: Either replace the line in the same location in the future or replace the line as soon as possible in an area outside of the site.

Here is the list of criteria that EPA uses to evaluate each alternative. The evaluations were performed in detail in both Feasibility Study and the Proposed Plan. We carefully looked at all technologies and utilized these criteria to reach our preferred alternatives, which brings us to EPA's preferred alternatives per component. I'll briefly go over these in the next few slides.

Our preferred remedy for sediment and floodplain soils is to excavate and dredge the sediments of floodplain soils. This would remove 280,000 cubic yards of contaminated sediment and floodplain soils in the Bound Brook system at a cost of over $178 million. It's expected to take approximately three years to complete.

I included this figure here. The takeaway from this figure is the areas identified in red along the brook. This is what Alternative 2 would involve.

Our preferred remedy for capacitor debris is full excavation and offsite disposal of approximately 32,000 cubic yards at a preferred cost -- at a cost, not a preferred cost, a cost near $33 million.

Our preferred remedy for groundwater is to utilize a pump-and-treat system. This system would effectively capture the site-related contaminated groundwater prior to it being released into the brook. Once captured, the groundwater would be treated and either released back into the brook contaminant-free or sent to the publicly-owned treatment works.

This is a conceptual example of what a system would look like. There would be three pumping wells. They're located over the site; they may be moved, but, again, they would be determined -- the location of these types of wells would be determined in design.

And, finally, our preferred remedy for the water line is to replace and relocate the line at a cost of $9 million.

As shown here, the existing line is in red, and the blue line identifies a potential relocation of this line in a current right-of-way. Again, it's conceptual and the location of the new line has not been determined at this point.

MS. SEPPI: Thank you, Mark.

I have to tell you, I'm so impressed nobody asked a question.

That never happens.

This is going to be the difficult part because we only have one microphone. So, I think what I'm going to ask you to do is if you have a question or a comment, please come up and use the mic. And then we'll just have to pass it over to the person who will be answering it.

We can try it without a mic if people have loud voices, but we'll have the mic here just in case.

Bob, why did I know your hand would be up first?

You want to come up here and ask your question or make your comment?

MR. SPIEGEL: I think I can speak loud enough. Just a couple questions.

The EPA's decision to include some limited groundwater treatment at the site is certainly welcome news. That was based on our comments, TPA, looking at the alternative for groundwater.

But the entire plume for the

groundwater is approximately how big, 800 acres?

MR. PRINCE: Yes, about 700 acres, Bob.

MR. SPIEGEL: All right.

And according to EPA's own documents, it says they're hydrologically connected to Spring Lake, Cedar Brook, and to the Bound Brook, according to the March 6, 2014 stakeholder comments sent out by EPA.

Is that correct?

MR. PRICE: Yes.

MR. SPIEGEL: So, you have an 800-acre plume that's hydrologically connected to Spring Lake, Cedar Brook, and to Bound Brook.

Does EPA know any other areas where this plume is hydrologically connected or discharging in any of the residential community that's above the plume?

MR. PRICE: Well, those are two separate questions, but I'm trying to get back to the figure that shows --

okay.

MR. SPIEGEL: Here's the picture of the plume.

MS. SEPPI: John, do you want this mic?

MR. PRICE: No, I have a very big voice, I think.

So, Bob, you're talking about the big picture of the whole plume and then in this particular -- for this particular action, we're talking about groundwater that discharges to the brook itself. So, this figure shows different -- it's a model of where groundwater -- based on our understanding of how groundwater moves, where it ends up.

Right?

So, the brown moves off, gets deeper, being pulled by municipal wells, we expect. The green in between reaches Cedar Brook or Spring Lake.

Okay?

And then the blue is the area that we know is contaminated water.

It's coming under the site and then surfaces in the creek itself.

So, what we know about all of these contaminants is that the ones that are an ongoing potential for exposure are the ones associated with coming up into the Bound Brook.

We don't have any attributable exposures associated with the other discharge.

MR. SPIEGEL: But you do have the contaminated groundwater plume discharging to Spring Lake and to Cedar Brook.

MR. PRICE: Yes, but not with PCBs.

MR. SPIEGEL: Okay.

MR. PRICE: And that's the distinction.

MR. SPIEGEL: Well, with TCE, at least that EPA knows of.

But you don't know where the entire plume currently goes. EPA --

MR. PRICE: Yeah, we know the extent of the plume. We do understand the extent of the plume in the groundwater and we do understand where it discharges.

And the difference is -- and this is a subtle but very important point -- the big groundwater problems, the big groundwater problem is from a solvent that Cornell used called trichloroethylene, or TCE. And it's a very large plume, it's -- it extends off into this area that's about 700 acres.

And we were here a few years ago presenting a very complex evaluation that we did of the groundwater and concluded that we didn't have a mechanism to restore that water.

MR. SPIEGEL: But that was based on information which was not entirely understood by EPA at the time because at that time you also said that the Bound Brook was not being influenced by the groundwater and it was only after we insisted that EPA check that they checked the brook, that they then realized that the, in fact, the plume wasn't several hundred feet down, which was what the assumption on OU3 was based on, but, in fact, could be connected anywhere up to 120 feet and above in groundwater.

Isn't that correct?

MR. PRICE: Not exactly, but I don't want to dispute the facts.

The Proposed Plan and the Record of Decision for groundwater for Operable Unit 3 in 2012 talked about one area of uncertainty, and that was we, EPA, didn't know whether groundwater that we knew was discharging to Bound Brook was carrying contaminants into the brook. That's the piece we didn't understand.

And more pointedly, we didn't understand at the time whether the contaminants that were getting into the brook were actually the PCBs that we're worried about in the brook.

So, we currently -- and we were supported by some excellent comments at the time on our proposal and we concluded we needed to take a step back and look at this area of discharge, starting right about here, above the site, where we know the groundwater is very contaminated with TCE and we also know that there was some PCBs in the groundwater itself.

How far and to what degree was that groundwater getting into the brook and then being an ongoing source of contamination?

We did identify that yes, indeed, that is a problem. And there is a stretch of about 1,700 feet of the brook starting at right here and going down to right about here where we find, yes, TCE but also PCBs.

And obviously, if we want to clean up the brook sediments, the fish, from the PCBs, we have to eliminate the sources that are getting in there. So, that's why we need to do a groundwater remedy.

MR. SPIEGEL: I think it's

important, though, to explain to people, as your Risk Assessor said, there is no risk or little risk from the PCBs in the water. And I think it's important to tell the community that there is a cosolvency effect that happens with the TCE and the PCBs that is releasing such high levels of PCBs into the surface water that it exceeds the criteria established nationally by several orders of magnitude according to EPA's own documents.

And EPA has national guidance now on groundwater remedy and completion strategies that they just released this last year. It's nationally, and it states, and I quote, that they -- that EPA is required -- in cases of sites, at any point in time EPA's regional office determines that a release or threatened release of hazardous substances, pollutants, or contaminants poses an unacceptable risk to human health and the environment based on new, previously unknown, or other site contamination -- contaminant-specific information, it may be appropriate to use CERCLA's broad response authority to address that risk.

And EPA did not know the extent to which the plume had spread by Middlesex Water Company pumping and that it was 800 acres, nor did they know that it had begun to surface until they began taking -- started putting the pieces together.

So, your -- while it's good that you're doing a limited groundwater at the site, that needs to be extended because you do not really know where this groundwater is going and it's an 800-acre plume. EPA needs to go back and re-examine the practicability determination now that they know this and clean up the groundwater as part of this.

The EPA's documents state that if the groundwater is not aggressively treated, it can continue to discharge for decades, maybe centuries; their own documents, "decades, maybe centuries."

Do you really want to babysit this groundwater plume for centuries?

I think EPA needs to look at this, they need to -- I'm happy that you're doing this removal. It's a very expensive removal. But my fear is that with this giant plume, and your own documents speculate, that there could be recontamination of the Bound Brook over time to a higher concentration than currently exists if this discharge continues to make it into the Bound Brook.

And it's already pretty bad. It's already, I think, if I'm not mistaken, the only water body in the entire state that has a "do not consume a single living organism." There's no other water body in New Jersey that I know of that has that broad an advisory.

So, I would suggest that EPA look at its national guidance for groundwater remedy and go back and do more with the groundwater.

And if Middlesex County Water Company caused this regional problem to become an 800-acre plume, then maybe Middlesex Water Company should be held accountable for the damage that they did to the groundwater under the entire portion of South Plainfield.

Thank you.

MS. SEPPI: Thank you, Bob, for your comments.

Walter, do you need the mic?

MR. PASACRITA: I don't think so.

If I do, you'll let me know?

MS. SEPPI: I will.

Would you state your name, please, for the record?

MR. PASACRITA: Walter Pasacrita, South Plainfield resident.

MR. AUSTIN: Hi, Walter.

MR. PASACRITA: Hi, Mark.

Are you planning to have another CAG?

MS. SEPPI: Well, there's nothing planned right now.

Walter is a member of our Community Advisory Group, actually, for the Woodbrook Road site, but we deal with the Cornell site also.

If you think it's necessary, we can talk afterwards and set something up.

MR. PASACRITA: I don't think there's any question about it: It's very necessary. I think Bob would agree.

MS. SEPPI: Okay.

MR. PASACRITA: Bob was President of the CAG.

Wasn't he?

MS. SEPPI: Actually, that's the Woodbrook Road site, a different site.

But we can get together and have a meeting related to Cornell, if you'd like to do that.

MR. PASACRITA: Yes.

That was my concern, whether you have a leaching possibility from Cornell-Dubilier. I know you cleaned it, but these contaminants are -- you have to make a distinction whether it's -- there is a release from the leaching into this contamination or whether what you're dealing with is something that is the result of the dumping.

In other words, are you working with the stuff that's there or are you concerned with stuff that's still coming in from Cornell-Dubilier?

Can you answer that?

MR. PRICE: Absolutely. I'm sorry if that wasn't clear from our presentation.

So, this is the 26-acre Cornell site. And we have now shrunk this down to be essentially River Mile 6.7, this is about River Mile 7. River Mile 0 is where the river discharges into Green Brook, and then we did another 2 miles of Green Brook as part of our study, and then we went up to 10.8 or something.

So, here's the facility, and then this is about 5.5 and --

Len, where's the bottom of New Market Pond, three point?

MR. WARNER: Three.

MR. PRICE: So, another two miles down the creek to get to New Market Pond.

So, there are two components of this action that are really speaking to what you're thinking about, Walter, which is: Hey, if the site itself, the facilities, which is the source of the PCBs, is still releasing material, well, we can't -- why are we even talking about cleaning up the brook if there's still a problem?

Right?

And there are two components to that related to the PCBs.

One is when we did this big cleanup on the facility, we came to the edge of the fence at the back of the facility where we came right up to the brook. You could literally see it another 20 yards down the slope. We still found capacitors.

But the way that remedy was constructed, we couldn't divert the creek to get at that material. We really were not equipped to deal with that.

But the site, really, it basically -- the facility, they were dumping in the back of the facility and the material just -- they just bulldozed it over and eventually it went down to the creek.

So, there's an armoring of stone over the top of that. So, it won't move, but there are still capacitors there down eight, ten feet, another -- I think we have another 30,000 yards of material right up against the brook that we need to deal with because there are high levels of material that have PCBs that have the potential to continue to release. So, that's piece one.

And then piece two is --

And Bob, I'm glad you framed it this way because we didn't really hit on this in the presentation.

PCBs are not soluble in water. Their solubility is very, very low, so they're just not going to dissolve in the groundwater and move much by themselves. That's not generally what we worry about with PCBs.

They tend to be very attracted to organic material and sediments and that's why they end up in fatty tissue in fish, because they tend to be affiliated with those sorts of materials. Except when there's a solvent present that they're -- they can be dissolved in.

And there's a lot of TCE in the rock here in the groundwater. So, there are PCBs at high levels in the groundwater here, really here, that has the potential to move. And we actually have seen that it does discharge in this area of about 1,700 feet into the brook.

So, the groundwater is not just the solvent, which does dissolve in water, but it's the PCBs dissolved in the solvent dissolved in the water that's all getting into the brook. So, we need to an action to cut that off for the next big phase, the expensive part of the remedy, which is all this floodplain area that needs to be addressed and then the sediments all the way down into New Market Pond or it's just going to get recontaminated.

So, if you're imagining how this might happen, clearly we need to do these first pieces first.

We need to cut off the groundwater discharge into the brook. We can do that by simply pumping at the water and bringing down the water level so that then the stream actually starts -- the surface water actually starts going into the rock instead of the groundwater discharging out of the rock.

And then we have to address these PCBs, and then we can get to the work of actually cleaning up the sediments.

MR. PASACRITA: In the 1970s, I worked for Kentile. They dumped a lot of stuff, contaminated liquids, in the soil.

Okay?

MR. PRICE: Okay.

MR. PASACRITA: Including trichlorethylene. Quite a bit of it.

The question is: Are there other companies that are continuing to do this now?

Have you looked into the possibility that you're having -- and the percentage, the difference between the PCBs and the trichlorethylene, what is it, if you've made any estimation of it?

Are we dealing more with a higher content of PCBs or trichlorethylene?

MR. PRICE: Well, there's a lot of trichlorethylene, which TCE -- you've asked two questions, so I'll answer the second one first.

There's a lot of TCE in the groundwater. When TCE -- but TCE is a volatile compound. So, when it releases into the surface water, you get down -- you know, you get down here, we don't measure it anymore. It just evaporates.

The reason we're worried about the PCBs is they don't evaporate. They're going to stay right there, they're going to get stuck in the sediments, they're going to get in the fish, and they're going to remain in the system.

So, while the volatile organic compounds that release are causing a problem because they carry the PCBs into the surface water, they're a secondary problem, really. It's the PCBs that they're bringing with them that are the problem.

Now, with regard to Kentile, Kentile was what, up here?

Right?

MR. PASACRITA: Yes.

MR. PRICE: And, so, we have -- we did a study of the groundwater that looked for other sources and looked for other problems. And there are other issues in this part of Middlesex County that we identified.

The 800-acre plume of groundwater that's TCE, this is from this facility. It originated here. And in particular, off of this -- off this direction, we did not find a secondary source. We didn't find something coming from, say, the Kentile direction.

But in our studies back -- that we have finished back in 2012, if you go back to that record, you'll see that we looked at every facility that we thought might be contributing to the groundwater.

MR. PASACRITA: Mark, in those days, 55-gallon drums of -- Kentile did a lot of coloring in their mixes for the tile that they manufactured. And it was either dump it in the backyard or pay for it to be removed. And they dumped it. They wouldn't pay the expense.

I don't want to take any more time.

The red area, is that 300 parts per million?

MR. AUSTIN: Thirty.

MR. PASACRITA: Where is the 300 parts per million?

MR. AUSTIN: That is in a different slide. This is 30.

MS. SEPPI: You mean where is it located?

MR. PASACRITA: Yes.

MR. AUSTIN: The 300, I believe, is right next to the site.

MR. PRICE: Yeah, this area is 300,000 parts per million associated with the capacitors themselves that are still in this area along here that's been capped, it's temporarily capped, but, really, it's right along the fence.

MS. SEPPI: Thanks, Walt.

MR. PASACRITA: I have more questions, but that's --

MS. SEPPI: We'll come back. We

can come back to you, that's not a problem.

MR. PASACRITA: I wish you will inaugurate the CAG again.

MS. SEPPI: Yes, I will.

Yes, sir.

Do you have a loud voice?

MR. ROWAN: I'll use the mic.

MS. SEPPI: And will you state your name, please?

MR. ROWAN: Yes.

My name is Gordon Rowan. I live right there. I've had the EPA in my basement, you know, so I'm pretty familiar -- sort of familiar with the problem.

I've done a little bit of research, you know, as much as a layperson can do, look on the internet. And, also, I'm in grad school, so I don't have a lot of time for that, but I've...

Conspicuously absent from this conversation is some stuff that I've been learning about bacterial remediation of these chemicals. I'm wondering if that has been explored.

The cynic in me wonders if that hundreds of million dollar price tag is attractive to certain contractors and what kind of arrangements.

Also, I happen to spend more time in this area, I think, than any human being alive. I walk my dog back there every day. Nobody else goes back there. It's a wild meadow, it's a habitat for some interesting species.

I've seen Eastern Box Tortoise there. That's classified on the endangered species list; it's not endangered, but it's classified. It happens to be a migration route. It's a wild meadow, it's a migration route for lots of species of birds. There's one tree that I counted over forty species.

I was there with -- actually, I'll tell you this. I was there with two guys who work at the Great Swamp who come to South Plainfield to go birding because it's so cool down here.

So, it's a really special spot, and I'm curious about dredging all the soil -- I think it's two questions. Maybe it's more than two questions.

How -- at the site, everything is capped over with pavement now.

Are we going to be capping over this wild meadow with pavement?

And, also, in the parts of the Bound Brook, what is it going to look like when we're done taking all the soil out?

MR. PRICE: Okay.

So, PCBs are rarely amenable to using biological treatment because they are resistant to -- the molecule happens to be very persistent in the environment and there are limited options, particularly in this sort of site setting for biological treatment. It does work in some settings, but not this sort of setting.

And the expectation at the end of the cleanup is that it would be restored to be an ecosystem similar to the one that's there now.

MR. ROWAN: Okay.

But, basically, you -- could you point in here to the areas that you would be essentially excavating?

MR. PRICE: Red, yellow, tan, and light green.

MR. ROWAN: Okay.

So, essentially, like, this whole area here is the wild meadow.

MR. PRICE: Yes.

MR. ROWAN: There's an American elm tree there. It's, like, probably a hundred years old. There's a huge area, there's forest.

It would be a tragedy to lose that, I would say. For me, that would be an extremely sad thing.

But I would ask that the community research this bacteria, what else can be done, what alternatives are out there. I'd like to know myself. I haven't had time to do it exhaustively, but there are a lot of people doing a lot of work towards this, and I would have to believe that there are other alternatives because this is a lot of money, first of all, and it's going to be ugly.

Restore it to -- how many years is it going to take to restore that to the condition it's at?

There's hundred year old trees, fifty year old trees in the area. It's going to be a loss.

So, that's all.

MR. PRICE: Thank you.

MS. SEPPI: Thank you.

Tiff, I know you wanted to leave early.

MS. LINDNER: Yes.

MS. SEPPI: You want to come up to the mic?

MS. LINDNER: My name is Tiffany Lindner, L-I-N-D-N-E-R.

I have a question, I think, Ms. Chloe, you might be able to answer this for me.

What signs do you currently have

by the plume area?

Because from my knowledge and from my, you know, canvassing and looking around there, there are no signs. And I've seen people fishing there, I've seen children playing there.

And we have to keep into mind -- keep in mind, rather, that there are people that don't speak English as their first language, there is people there that are from a different culture -- as you know, this area, very diversified -- and they don't understand that you can't eat, you know, consume the fish in the water, you can't play in that water.

My question to you is: Are there signs up now?

MS. METZ: Well, okay, so this is one of the major problems with fish advisories and the reason why we need to do the cleanup that we're proposing to do, it's because fish advisory signs get taken down, kids take them as trophies, you know, people who may not speak that language don't necessarily understand what they mean.

So, there are signs, to my knowledge. I don't know how --

MR. GARCIA: Yes, there are many signs in English and Spanish.

MS. METZ: Yeah.

MS. LINDNER: Okay. I didn't see any.

Also, there's not only Spanish people that are there. There are people of Asian descent, Indian descent.

Perhaps there could be some way that they could be put into concrete and put out, you know, in the area. I know it's a low water table. We could put something in concrete to keep it in.

We could kind of put characters there instead of any kind of language or lettering. It could be, you know, a fish sign with an "X" through it or, you know, people swimming with an "X" through it.

You know, there's fishing derbies there, there's stuff going on there, and there shouldn't be. And, you know, I'm quite concerned about that also as a resident.

MR. WARNER: We investigated at one point to see if there had been fishing derbies --

MS. SEPPI: Len, can you please stand up?

MR. WARNER: I'm sorry.

At one point, we were asked by EPA to try to find out if there were any fishing derbies on New Market Pond because there was a real concern. And we researched really closely, and it seemed like the fishing derbies were further down, on the Raritan or down by Green Brook. So, we --

MR. PRICE: Johnson Lake Pond, where Piscataway did fishing tournaments.

MR. WARNER: So, we were very concerned about that.

And we did do an angler survey, which is documented in the RI report in the risk assessment report. So, that will give you more information about who we found fishing and what they reported as far as whether they ate their catch or not and if they were aware of the advisory or not.

So, that's in the document. It's certainly a concern.

MS. LINDNER: And will there be some kind of, you know, option now to get some signs put up or something?

I mean, could it be put into thought?

Because it's very important. It's very important for youth, it's very important for, like I said, people who don't speak the language.

MR. WARNER: I know that EPA checks on the signs periodically because when we were out doing our sediment coring and fieldwork, we were asked by EPA to let them know where we saw people fishing so they could get more signs out.

Diego, you have the storage signs out there and --

MR. GARCIA: Yeah.

MR. WARNER: -- Chris Perkins and some of the guys helped put up signs. So, it certainly has not been neglected as a concern as far as the communication and the advisory.

MS. SEPPI: We go out monthly and go and check around the pond to see, and you could usually tell if people were keeping their fish: They come with a bucket; you know, if people were just there throwing their rod into the water, they weren't taking it home.

The signs were there. But you're right, sometimes people, it's more important to them to have something on their table for dinner than to, you know, limit --

MS. LINDNER: It's a cultural thing too. People from other countries that come here, they fish near their local home, so they're thinking coming here they can do the same. They don't understand.

MS. METZ: And because you're a resident of the community and you may know more information about where people may be fishing, if you can convey that to us that's very helpful because, you know, we don't always know where the best place to put these signs are.

MS. LINDNER: Absolutely.

MS. SEPPI: Thank you.

MS. LINDNER: You're welcome.

MS. SEPPI: Yes, sir, right in front.

MR. NEWBERG: Obviously, whatever plan is eventually implemented --

MR. AUSTIN: Just state your name.

MR. NEWBERG: Oh, Timothy Newberg.

Obviously, whatever plan is eventually implemented is going to take a long time.

I'm wondering if in the meantime,

with the new information gathered from these studies, are there any recommendations for either areas that people should avoid or, like, things that business or local businesses and people should do differently to stay safe?

And then, also, during the process in the coming years, to actually deal with this problem, what's, like, the best resource people can use to stay connected with this issue and get all the information they need?

MR. PRICE: Chloe, do you have any thoughts on whether there's any -- you know, it's sort of a question of the nature of risk.

Right?

We're talking about risk that evaluates the potential for exposure over very long periods of time. And, so immediate actions, walking a dog, coming home, not tracking dirt into your house, that's one thing one might do.

I don't know if you have any thoughts.

MS. METZ: Yeah, I think that's an important -- it's important to put the risk assessment in context.

We do assume very health protective assumptions, which is that people generally stay in the same spot for 30 years and stay there 350 days a year and access the same soil on some very frequent basis.

And some of those -- you know, while I mentioned we looked at a residential yard exposure to the floodplain soils, the situation at the site now doesn't actually -- it doesn't actually support how the site area is being used. There are no residents that are directly backing up to the brook that we haven't evaluated under the OU1 decision.

So, we looked at residential yards kind of separately, but we did take into consideration what if someone did live right on the banks of this and what would those risks be?

So, I think based on the use of the brook now, I don't think we have the situation where there's any immediate risk if you're walking your dog or if, you know, you're just hanging out in the area in any of the parks or anything.

And the site itself is very -- it's fenced. And like John said, we have armoring over the capacitors and the surface water didn't pose an unacceptable risk in risk assessment. So, it's really kind of a long-term risk that we're looking to prevent.

So, I can't see aside from just not trespassing where we have very high levels of contamination anything that you should really do to avoid your activities.

Obviously, follow the fish advisories that we discussed before. There's very good reason why fish should not be consumed from this water body.

MR. PRICE: And then with regard to stages of cleanup, obviously we are proposing a tremendous amount of work that needs to be done, and we're going to do it; not all at once, we're going to do it in pieces. And the way that this -- the way we approach these sort of cleanup projects is to get to the remedy selection stage, get through this very formal process, but then, as we are doing the cleanup, actually come back to the community at each major stage, make other presentations.

We do try and keep a lively presence on our EPA Region 2 website of what's really going on and then issue fact sheets to -- that we post. And then we can be active with people who are on our mailing list, which is one of the reasons why we are interested in having you put yourself down on our list so that we know these are people who care enough to come out on a Tuesday night in October and hear about the project and are concerned.

So, that's a great basis for us to know, hey, we want to keep in touch with them.

MS. SEPPI: And you can call us. You know, call any of us at any time. Our numbers are on the website, my number is, and I can certainly get you in touch with anybody if you have a particular question.

MR. NEWBERG: Thank you.

MS. SEPPI: You're welcome.

Sir, in the back, yes, you may.

MR. DIEGNAN: Bob made reference -- Pat Diegnan.

Bob mentioned outside, he made reference earlier to Middlesex Water Company well. And in terms of the larger plume -- correct me if I'm wrong, Bob -- you recommended they reestablish, reactivate those wells and it will lower the groundwater.

Is that a recommendation that you are pursuing?

Is this something you consider to

be advisable at this time?
Is there anything we can do to expedite that?
MR. PRICE: Let me get to -- I'll use this.
Can we put up the big picture?
Technology is not my thing.
So, Pat, if we look at this figure, right, and we've got a very --
You know what I want? I want the picture of the whole -- yeah, that's it.
So, here we have our facility, Spring Lake, and if you go --
MR. AUSTIN: John, you want a pointer?
MR. PRICE: I have a pointer.
(Laughter)
MR. PRICE: If you go up there, there's what's known as Middlesex Water Company well --
UNIDENTIFIED SPEAKER: Park Avenue.
MR. PRICE: Park Avenue well field, one of Middlesex Water Company's

well fields that they use to provide water for a large section of Middlesex County.

And they used to have another well field, which they called the Spring Lake well field that surrounded --

Thank you.

Who's doing that?

MR. AUSTIN: Me?

MR. PRICE: -- that surrounded Spring Lake. So, Spring Lake is right here, and if you walk around Spring Lake you'll see some structures that they actually still own, and there are a series of wells there. They were pumping water out of those wells at the rate of about one to two million gallons a day, started in 1964.

In the '90s, they discovered that -- independent of the site because the site wasn't identified yet -- they identified that they had some problems in their system with some volatile organic compounds, including TCE.

They made a business decision that among all of their wells, these Spring Lake wells had particularly high levels of chemicals, including TCE, and that as a business decision, if they operated some of their other wells instead of those, they could get enough water and it would cost them less to treat the water to provide to the community.

So, they're a regulated company. They have to put all their water through a treatment system. And, so, they're -- they elected to not use that system, and it finally shut down in 2003.

So, that system is owned by them, hasn't operated in over ten years. And when it was affecting the groundwater in the area near the site, they were pumping at one to two million a day, which is a lot of water.

And we want to do kind of the same thing. In other words, we want to draw the water table down a little bit so that the groundwater isn't discharging to the brook anymore. We can do that at about 50,000 gallons a day. So, as a teeny, teeny fraction of the amount of water that we would need to extract and treat, we can take care of it because we're right there, right next to -- brook is here, this is almost half a mile from Spring Lake. It just doesn't make sense to deal with their system when we can solve the problem in a much more economical way near the brook itself.

MR. DIEGNAN: I think we're talking about the larger.

Correct, Bob?

By reactivating the wells at Spring Lake --

MR. PRICE: We determined it would have no effect on the cleaning up.

MR. DIEGNAN: Wouldn't it lessen the groundwater?

MR. PRICE: Our conclusion was that you could pump it for hundreds of

years and it would be just as
contaminated as it is today.
MR. SPIEGEL: Wouldn't it lower
the volume of the groundwater?
MR. PRICE: Lowering the water
table is the way we're proposing to
solve the problem in the brook, yes.
But if we can do it for 25 GPM,
why would we do it for --
25 gallons per minute, right?
Put a couple wells, put them near
the brook, pump at a relatively low
rate, the water no longer discharges to
the brook because we're collecting it.
MR. SPIEGEL: Well, we have to
stop the discharge to Spring Lake and
Cedar Brook if you started the wells
again in Spring Lake. Currently,
that's discharging.
Right?
MR. PRICE: Yes.
But understand what we're -- our
goal is to prevent the discharge of
contaminated water that has PCBs into
the Bound Book, because that's what

we've we concluded is the problem we need to solve.

MR. SCHULTZ: What's the contaminant in the large plume?

MS. SEPPI: Bill --

MR. PRICE: Primarily --

MR. SCHULTZ: I'm sorry, Bill Schultz, Bergen Riverkeeper.

The large plume, what's the primary contaminant, TCE?

MR. PRICE: Right.

MR. SCHULTZ: Not the PCBs.

MR. PRICE: Correct.

There are -- we have lots of wells. And as soon as you get on the other side of the Bound Brook, we don't find PCBs in the wells. The wells that are contaminated with PCBs are the ones near the Bound Brook and at the site.

So, we don't have a PCB problem that moves away from the site because it's very hard to dissolve PCBs --

MR. SCHULTZ: But you have a plume contaminated with TCE. And if that comes down through the site, that's going to mobilize the PCBs.

Correct?

MR. PRICE: Yes.

MR. SCHULTZ: So, okay, doesn't that leave open the long-term possibility of recontamination after the brook is clean?

MR. PRICE: I don't want to sugarcoat this: We cannot -- we evaluated whether we can clean up the groundwater for the PCBs. We concluded that it's beyond the capacity of the technologies available to us. And, so, therefore, to stop this problem, we need to turn on a system and prevent discharge to the brook.

I didn't say we had -- there's an opportunity to turn it off. We'll have to turn it on and keep it running.

MR. SCHULTZ: In perpetuity.

MR. PRICE: In perpetuity.

MS. SEPPI: Thank you, Bill.

Yes, sir?

MR. ZUSHMA: Hi. I have a couple questions. Michael Zushma, I'm a resident of South Plainfield.

How is lowering the water table going to affect private wells?

I've owned a house in Rahway -- I don't own it anymore -- put a private well in there, it's over by the Middlesex Water Company.

If you lower the water table, the private wells, are they going to go dry?

MR. PRICE: Remember, we're pumping in 25 GPM with our three little wells. They're pumping at about -- from Park Avenue, I think it's, like, four million gallons a day.

MR. ZUSHMA: I'm talking about the private citizen wells.

MR. PRICE: Well, so, they're already having tremendous effect on the water table in this area near their wells, and we won't have any effect relative to that.

MR. ZUSHMA: Second question, will you start dredging the Bound Brook?

When is the earliest time you'd be dredging, starting?

MR. PRICE: Well, my expectation is after we select the remedy, the phases would probably be in this order:

We do the groundwater piece first, install wells and start pumping, draw the water table down so that part of the discharge to the brook is cut off.

Then we'd deal with -- the capacitors are right next to the facility, start at the facility, we've got to get all the way down to the New Market Pond once we get started, but we'll start up at the top.

It will take us a couple of years before we're up and running at the pond, but -- on any of that sediment or soil removal.

MR. ZUSHMA: And when you do sediment and soil removal, will you be working with FEMA as far as the floodplain maps --

MR. PRICE: Yes.

MR. ZUSHMA: -- our concern in the Borough of South Plainfield.

You know, if they bring the water table down, are you going to change the floodplain maps to keep people out of the flood-prone areas?

Will that help that?

You know, flood maps for FEMA?

MR. PRICE: Yes.

MR. ZUSHMA: And if you're doing this remediation work, you're going to lower the streets.

Will that affect the flood maps where people are in flood areas?

MR. PRICE: Well, obviously, the -- well, I don't know if it's obvious.

The Army Corps and the State of New Jersey have been working for a number of years on the Green Brook flood control project because there's a tremendous amount of flood problems up and down the Green Brook corridor and the Bound Brook corridor. And you can get lots of information from them.

We, obviously, are very interested in what they're doing for kind of the reasons that you're envisioning. We're not doing their work, but some of the activities that we would implement might result in there being more capacity for floodwaters when they come through this area to be held in this corridor and not end up on our streets in the community.

So, the way I like to describe this is we've been talking to them for years about how those -- how this project and their -- let me just summarize.

They've been working down here along the Raritan in Bound Brook, they're working their way up, they have some projects that they're working on right at the headwaters of the -- at the end of Bound Brook.

Bound Brook the town, that was the first one I said, and then Bound Brook the brook is the second.

And they've got lots of work still to do and they're doing it in phases. They're working their way up. They do have some plans for flood walls and changes all the way up into the area around where we're working.

They need to see what our plans are, and then we may find some ways where there are some synergies of some opportunities where our activities actually fit well with what they need.

But they're the experts on flood control, and, so, we're going to -- you know, Superfund can't be doing flood control work. That's not what our job is. But to the degree that we can put those two things together and have one project kind of meld well and fit well with the other, that's what we would like to happen.

But first thing we have to do is say: Hey, this is what our plan is and what we expect to do.

MS. SEPPI: Yes, in the back?

MS. LINDEN: Cate Linden.

First, I'd like to offer applause to this gentleman's concern with the wildlife and biota in the area that might be affected by this process.

What kind of restoration will be taken after this stuff is dug up?

And specifically, is anything happening now that you guys can take note of what kind of wildlife is in this area, what kind of hundred year old trees are there that might be affected, and how do you plan to remediate the situation?

Also, I have a concern about the scope of the whole OU4 and whether -- you mentioned that it's going to take three years to complete this process. I have a concern of the recontamination of PCBs.

But, also, how do you know that this operable unit won't change in three years?

And, also, I know that EPA has mentioned that there are several sites near this -- Chevron, naming a few, Woodbrook is up there.

How has their contamination affected this effort?

MS. SEPPI: Can you remember all three questions?

(Laughter)

MS. SEPPI: I forgot already.

MS. LINDEN: Natural resource, is there anything being done simultaneously?

How you -- what's your plan to stop the contamination?

And over three years, will this change at all?

And I also have some letters from the public that I'd like to submit. I'll give this to you (handing).

MR. PRICE: Thank you very much.

Let me just speak very briefly about the ecosystem reconstruction process.

Obviously, it's easy to the rip it out; once you get the money, you just get the backhoe. And all the critters are gone.

Before that ever starts, however, we do an evaluation of what's there today, how it functions, and then what it would take to reconstruct it. And the goal is to put back a system that over time will recover to be something health -- a healthy ecosystem that just doesn't have PCBs in it any more, fully acknowledging that that's going -- what humans can do to restore a hundred year old tree takes a hundred years.

So, that's the way this stuff works. So, I'm glad you're asking that question because that's, you know, the honest answer: Our goal is to put back a system that will allow for the reestablishment of a healthy ecosystem up and down the corridor, Bound Brook corridor, where we need to work. But it will take work by us and then time for it to recover to something that has that sort of bucolic character that it does today.

MS. PENSAK: John, I just wanted to interject that we don't do -- we do have federal trustees. We work with Fish and Wildlife Service, we work with NOAA, we work with our state --

MS. LINDEN: Is it being done while the cleanup is...

MS. PENSAK: That natural resource damage assessment is a separate legal action from this, but what I'm saying is that we work with our partners to evaluate the area and, of course, to restore it to the best that we can.

MR. PRICE: The second question was about recontamination during this very long cleanup phase, also an excellent question.

But I'm going to answer your next question first, which is -- Mark went through this. There's a tremendous amount of information about this in our administrative record, so I will very briefly say we did an evaluation of all constituents that might be in the system -- metals, pesticides, PCBs, solvents -- our entire list of contaminants that are -- that we pursue because they pose unacceptable human health or environmental risks.

And the process -- it's a process that we go through is essentially blind to where it came from. The risk assessments that we do simply evaluate what we found. They don't say: Well, that didn't come from Cornell so we didn't look at it.

It's really like: Well, what's out there?

And the clear message I want to send is there's clearly a big PCB problem. It starts at the site. And, yes, Woodbrook Road is a PCB site; yes, it's above the facility, way up here up in Dismal Swamp; yes, we are doing a cleanup there, but we don't see a pathway where there's real evidence that this did much of anything to contaminate the brook.

We're still taking action, we're removing PCBs from that site too, but the brook problems start here and go down essentially to New Market Pond. And, so, that is a very simple way of identifying that we don't have other parties that we feel we need to take an action to, other parties who have contributed that we feel we need to take action to address.

Then that gets to your middle question, which is: Well, how do we prevent recontamination?

And do we need to start up at the top, where the levels are the highest, and where we are using the fact that water flows downhill, to start up at the site and work our way down the system, so the last piece we're going to do, I can assure you, will be New Market Pond because that's -- New Market Pond fortuitously is an area where sediments tend to deposit.

And you can see it in our studies. You can see that contamination is highest at the site, goes lower, lower, lower, lower but still elevated, you get to New Market

Pond, there are PCBs in the pond, and then you get below the dam and all of a sudden it's really, really much, much cleaner and we don't -- there are few hot spots that we've identified, but, essentially, our work will stop at the dam.

MS. SEPPI: Bob, I'm going to go to other people first, then we'll get back to you because we didn't get around.

Yes, sir?

MR. LISSY: David Lissy, L-I-S-S-Y, South Plainfield. Two questions.

There seems to be two issues emanating from here: Most serious is the PCB concentrations that are coming out of the former site; the other is the TCE, which is kind of coexisting with the PCBs, in that it's acting as a solvent and dissolving some of the PCBs as it comes up with the groundwater, dumping it into the stream, and away it goes.

But the PCB is not only to the South Plainfield, Spring Lake wells, but it does eventually get up to the Middlesex County wells and Park Avenue.

How -- I mean, Middlesex County had to close down wells in South Plainfield because of the TCE problem, along with some others, back in -- just after 2000.

How is this TCE plume going to eventually affect the wells up in the Park Avenue/Cedar Brook area to the point that they have to close those wells down?

Again, it's a large water purveyor in this region; not just South Plainfield, but Plainfield, Edison, Scotch Plains.

MR. PRICE: Yes.

MR. LISSY: So, that's the question on that one.

The other thing, which kind of was alluded to, somebody had said, with FEMA and the flood control.

I've lived in South Plainfield

over fifty years, when Spring Lake was a swamp, not a lake. So, the problem is going to come in -- and we've had the experience of Hurricane Sandy and the one before and numerous other times. I'm also a member of the Elks, we get our lodge flooded out numerous times, it's an ongoing thing.

When FEMA finally decides to work its way back up to South Plainfield in twenty years, maybe, how is that going to affect what you've done?

I mean, if they've got to put flood walls -- if the flood walls have to come in, you know, maybe to Cornell-Dubilier, how is that going to affect what you're doing now with the cleanup?

Because that could re -- you know, agitate areas, the wetlands, and things like that.

Will that, you know, re-enter in some of these PCB contaminations?

MR. PRICE: Okay. So, they're unrelated questions, but both very good ones.

Going back to our groundwater studies associated with what we call Operable Unit 3, among our conclusion -- among our evaluation steps was to look at the scope of this entire plume. And the conclusion that we drew was the plume is very old, started in the 1930s, and pumping wells -- owned by someone else, but pumping wells had been operating in this area since about the time that the groundwater was being contaminated from the site.

The reason we can't address the groundwater is because the rock, it's felt, has an affiliation for the TCE; it gets embedded in the rock and can't get back out. The extent of the contamination in the rock, by our estimation, has basically -- it's exhausted its ability to move further.

Basically, it's kind of at a static distance, still being fed a little bit by material that's closer, but, basically, it's been pulled about as far as it can be pulled. We do believe it does barely reach the Park Avenue well field.

Park Avenue well field, Middlesex County, has been dealing with the fact that this is a, you know -- Middlesex County, there's a lot of people living here, lots of businesses, and they've got other -- there are other concerns that they're dealing with that are also affecting that well field. They need to treat it. TCE is actually not the primary thing they're worried about.

And they're doing a very good job of treating the water. So, we don't think that this plume is going to exacerbate their problem.

With regard to have -- it's actually the Corps and the State of New Jersey that are doing the flood control project.

FEMA does another very important job. And if it really takes them twenty years to get there, I sure hope that we're done. And by being finished, I mean that our goal is to remove PCBs that are off the facility from the system, so when we are finished with our work, were they to come in later with some other position about how a wall is going to need to be built, we wouldn't be concerned about that.

But I'll re-emphasize that we're very concerned and interested in having a collaboration with them -- and they are too -- over the long-term because, as I think you're -- in your estimation, these projects are kind of linked together. There's sort of an opportunity for some synergy here with the two projects working together.

MS. SEPPI: Anybody else have a question?

One more, Bob, and then I'll get to you.

Yes, sir?

MR. MARIN: Okay. I'm Edward Marin.

MS. SEPPI: Your name?

MR. MARIN: I'm Edward Marin.

MS. SEPPI: Thank you.

MR. MARIN: So, my house is over here.

MR. PRICE: Okay.

MR. MARIN: The question is, number one, will you guys be remediating that area?

MR. PRICE: Okay.

MR. MARIN: And number two, a few years back we used to run well water there, and then out of nowhere we were told that we had to switch to city water.

So, my question is: Was there any possibility that we could have been consuming some sort of contamination through that water throughout the years that we used that well water?

MR. PRICE: Okay. So, we have a -- we have a particular phase of the cleanup that's been dealing with a problem that we haven't really talked about today, which is that when the facility operated, and then for a number of years later when it was operated by others, there was some releases; primarily, airborne releases, some material that was picked up and dumped.

And we have found -- and we have been -- and that's the first phase that we worked on; mostly residential lots, couple commercial lots, that kind of surround the facility. We have worked, we have looked at hundreds of properties over these years.

If we haven't come to you, it's because we don't have any reason to suspect that we need to get as far away as you are from the facility. We have gone out in sort of concentric rings of property around the facility until we were confident that we identified where the issues were.

That work is mostly finished, and there isn't -- where you're generally identifying where your house is, there isn't a phase of this work that would affect it.

And if anyone wants to talk specifically about their property, we're happy to do that tonight or at another time. Please feel free to call, and we can discuss it at some other time.

Why don't we talk separately about the well?

There's no way --

MR. MARIN: You got a business card on you?

MR. PRICE: Absolutely.

There is no way for us to know what happened years ago. There were private wells in that general area that were closed by the state in the mid '90s because there was some sort of a TCE source. And that eventually led to the discovery of this facility.

Now, there was also some other areas, essentially, that have been identified. So, it's not clear if what's called the Pitt Street well field area -- it's a New Jersey project -- it's uncertain whether that was really even associated with Cornell. It may have been something else over there.

But maybe we can talk about that separately. I can't -- you know, I can't tell you what happened 25 years ago.

MR. MARIN: Thank you.

MS. SEPPI: Bob?

MR. SPIEGEL: One of the statements that he made was that there was -- that primarily, the TCE evaporates off once it comes into the Bound Brook for a certain amount of distance and then it evaporates off and all you're left with is the PCBs in the water.

So, one would imagine that there's TCEs volatilizing for that stretch of the brook into the ambient air in and around, I'm sure, in that general area.

Has EPA done any air monitoring to see what the levels of TCE are that are being volatilized by this groundwater discharge?

Because we all know that TCE is a really nasty chemical; it can pass through the wound, it can affect unborn children, it's really not something that you want to be exposed to.

Has EPA done any air monitoring of that evaporation in the plume where you're saying that the TCE evaporates in the ambient air?

And then the second thing I wanted to just bring up is with regard to the actual cleanup. I've been involved with a number of remediations, and, by far, it seems like the largest amount of damage is not necessarily the cleanup itself, it's the access roads that are built to do the work.

And when EPA works with the community and collaboratively, they can reduce that footprint of the access roads: Instead of making two lanes, making one; have turnaround zones that are smaller; make a much smaller footprint with the cleanup.

And I think that EPA should really look to do that here so that they minimize the actual footprint of the roads, the access roads, to an absolute minimum, and that will, overall, reduce the amount of ecological damage to unnecessary areas that are not going to be remediated but are needed to be used for access to get to those contaminated areas.

So, I just want it considered. If they do that -- I've seen them do it at the CIC site, and it worked. You wouldn't even know they were ever there remediating for arsenic several years ago.

MR. PRICE: So, speaking to the vapor exposure itself that we measured, there was --

Chloe, you want to speak a little bit --

MS. METZ: We didn't take direct measurements of the TCE volatilizing off the surface water, but we do have a way of modeling what concentration you would see in the ambient air as a result of certain concentration in surface water. And that was evaluated as part of our record of assessment when we looked at, you know, recreational exposures to the Bound Brook.

And we looked at inhalation of the volatiles in surface water, and that was -- the numbers from that were very low. And although TCE is very volatile, it also disburses very quickly. So, you would have to be right at the surface of the water breathing that --

MR. SPIEGEL: You mean like a child?

MS. METZ: -- for a very long period of time.

MR. PRICE: And the distinction is, you know, we talked a lot about and have to worry about at this site, even though we haven't seen it as a problem, EPA talks a lot about vapor intrusion being a concern for residents and houses and structures.

Because when TCE or another volatile compound gets into a house, it can reside in a house where someone lives and then the exposure is constant; it's whenever they're home, that sort of exposure.

This disbursal of -- rapid disbursal outdoors is generally not experienced as a hazard.

MR. SPIEGEL: Right, but you generally don't have this concentration.

And the reason I'm asking is -- EPA should do this is because I went down behind Sherban's and many times have smelled very, very strong odors coming out of where you're saying the groundwater's discharging from those various places up by -- across the street from Sherban's and along the Bound Brook. And those odors were quite pungent at times that I went down there. And that's going to vary depending on the groundwater, depending on the time of year. That's a very high groundwater area.

So, measuring -- your models, as you know, are just guesses. And without real data, realtime data, you don't really know if there's an unacceptable exposure, especially since your own documents and your own people admit that there's evidence of children playing down by the brook every time you go down and do work.

So, I would like to see some realtime data collected so that you know how much, and measure the TCE levels in those tunnels that are where -- underneath where the railroad tracks go, so you actually can see if there's a buildup of concentration.

Because, like I said, I've been down there several times. And I've notified you those times --

MR. PRICE: Yes.

MR. SPIEGEL: -- where it really stunk behind Sherban's. And, you know, anybody that walked back there, you could smell that smell. And that wasn't natural, it was inorganic, chemical smell.

MR. PRICE: You know, Bob -- and we talked about this maybe six months ago, you and I, and then we did send some folks out at the time to see if we could...

The nose is a funny organ. It's very, very sensitive and it can be -- the reaction to different odors can be very different for different people.

We take your comments that you're suggesting realtime monitoring.

The other thing that we did at the time was in addition to sending someone out to see whether we could replicate what you'd experienced, which we realized we've logged hundreds of hours of technical people time out in the brook over a long period of time, where these folks are trained to look for this sort of thing, to record these sorts of things.

So, we went back, reviewed with our crew, reviewed with the folks from PRT in Edison that we work with, to try and find out whether we could find any replicable sort of case where: Oh, yeah, yeah, we found this.

We just haven't been able to reproduce it. I'm not --

MR. SPIEGEL: Is it possible that your people are desensitized to the smell from working down there for such a long time without any respirators or masks, that they could be -- you know, just have a very high threshold so that's why they're not smelling it?

MR. PRICE: I'm a little removed from the field work.

Len, I don't know if you want to speak to this since you did some of the outreach at the time.

MR. WARNER: I mean, just from my own experience working and collecting samples for almost 25 years, I, personally, think that would be unusual because I don't think we get -- you're absolutely right that in the course of a day, with certain contaminants you can get what they call "olfactory fatigue." So, you can smell something at the beginning of your work if you're disturbing soil collecting a sample, and then the smell appears to vanish; it's not the contaminant that's vanished, but it's your sensory organs.

But I -- you know, just from my own experience, I don't think that we become desensitized to chemical odors or, you know...

MR. SPIEGEL: But you acknowledge it's evaporating there.

Wouldn't it be prudent to understand the mechanism for that evaporation and how much that's generating by way of exposure?

MR. WARNER: I guess my response to that question would be that I think we have really good confidence in the surface water data that we're talking about, that approximately 75 nanogram per liter concentration that came from a core water pass of samples that we worked on with MIT.

And, so, I would have the confidence that EPA has in the model based on that surface water data to derive an inhalation value. I have a lot of confidence in the surface water data and the concentrations.

MR. SPIEGEL: Would you want your child playing in that area and allow them to play there, feel confident that there was no threat to them in that area that I'm talking about?

MR. WARNER: In that question, I would go back to the risk assessment --

MR. SPIEGEL: You're saying that there's no problem there, you don't believe the models are wrong.

Would you allow you're child to play down there and breathe in that zone?

MR. WARNER: I would be concerned probably about sediment, contacts with sediment for a child. That would be my main concern.

I have a daughter who's 14 and certainly am not -- I'm very empathetic to the idea of people who are growing up with a contaminated property in their neighborhood effecting -- causing concerns, possibly effecting their property values.

And everybody -- as EPA said, everybody's coming out here and demonstrating the interest in the project and the findings. It shows how you want to be involved in the process and understand it and make the right decisions.

MR. SPIEGEL: Sure.

But if the groundwater here is contaminated and EPA has given up on trying to say it can be cleaned up, but I think they need to go back and try harder because they haven't really tried anything. They just said: We've determined it's not practical.

Without there being any kind of real attempt at cleaning up the groundwater.

And, again, the gentleman said it right: If this water is continuing to spread, the plume is spreading and probably beyond 800 acres at this point, and it makes a lot more sense to at least make an effort to try to clean it up or contain it or do something on the larger picture, especially since it is a drinking water resource and everybody understands how important drinking water is.

MS. SEPPI: Any other comments? Yes?

MR. BLANCO: Hi.

MS. SEPPI: Hi.

MR. BLANCO: My name is Jonathan Blanco, B-L-A-N-C-O. I'm a resident of South Plainfield. I have a few questions.

Earlier when we talked about the risk factors, the way you guys described it I thought was very vague.

What are the risk factors?

How do they actually affect our health?

MS. METZ: Well, the risk assessment that we do is all hypothetical. It assumes that there is, you know, a person who lives on a property and accesses this contaminated material 350 days a year for 30 years.

It assumes that you ingest 200 milligrams of soil if you're a child, 100 milligrams if you're an adult.

Those are the kind of -- and I don't, you know -- it's really complicated, and I can talk to you a little bit more afterwards if that would be helpful. So, you know, because there are a lot of factors that go into it, and this one is a particularly complicated site.

MR. PRICE: Mr. Blanco, are you specifically referring to what are the effects -- the human effects from PCBs?

MR. BLANCO: Yes, or any other contaminants and what the actual outcomes are.

MS. METZ: So, we understand that

certain exposure levels to PCBs, there are noncancer effects to the immune system, to skin, those kind of things.

EPA has identified PCB as a probable carcinogen, so that means we have a toxicity value at a certain level. We know that there is an increased probability that cancer would occur if you were exposed at that level.

So, we do have the quantitative toxicity values related to PCBs and the other contaminants we looked at here, which weren't really a concern, that were used to make these risk estimates.

MR. BLANCO: Okay.

Another question: In the years that it will take if the remediation processes do get passed and funding is allocated and all that stuff goes right, have you taken into account the expansion of contaminants going down the water?

Like, furthering itself as these processes are passed?

MR. PRICE: Well, there's sort of two parts to the questions that I might answer, but -- and I'll sort of do a quick version of both responses.

Our feeling about the system from the data we collected is that the conditions that have been set up in New Market Pond, just by the way the pond is built, have really limited the degree to which that contamination gets beyond it. So, that means that what might have been a ten-mile cleanup is only three-and-a-half-mile cleanup, which is better.

So, still a lot of work to do, and, obviously, it's tremendously expensive to do what we would propose to do, but at least there's kind of a natural -- manmade, but a natural point at which contamination seems to be arrested.

A second way to answer that question might be: Hey, when you guys are doing this work, you're going to be actually dealing with PCBs. You've got to dig them up, you've got to handle them.

And we take that part of -- people say: Why is it so expensive? And why does it take so long?

And just imagine trying to remove PCB-contaminated sediment from a rock. We're probably going to have to bifurcate the brook, channelize it off to one side, create a dry side, clean that all up, put the water over on the other side, then clean out the other side, and move down and do it again.

So, to do that without releasing material down the brook is complicated. And, you know, environmental dredging and these environmental excavations in an active system that will periodically flood is very tricky.

So, we have to do it in a measured way, we have to do it in pieces, and the goal is to do it so that we don't release material and so that we can -- that's why also we start at the top and work our way down.

MR. BLANCO: All right.

Another question that I have is we talked about the contamination in wildlife and how we shouldn't be consuming wildlife in these contaminated areas, like the fish.

What is being done about eating vegetation like plants, like gardens?

MR. PRICE: None of the areas that we are addressing are in -- as part of this are garden available, available for gardening.

And just as an aside, as part of our cleanup work here, we did have to work in some gardens and we did have some questions from residents about this and we actually did do some testing and did not find issues for their particular vegetables. It's obviously a very specific -- site-specific thing.

It happens that the primary concern in the world of PCB contamination is really fish. And the reason is because small fish are in the contaminated sediments, small worms and stuff are in the sediments, they get eaten, the larger fish eat those smaller fish, they keep all the PCBs and they then are eaten by larger fish, those larger fish keep all the PCBs and they store them in their fat tissue.

So, if you've got a ten year old fish that's been eating for a long time, it's going to have a big burden of PCBs because it's like a natural collector in those fatty tissues.

And then the top of the food chain, whether that's an eagle or a human, is then the receptor and the new reservoir for PCBs, which gets stuck in our fatty tissues too.

MR. BLANCO: And my last question is we talked about the evaporating contaminants coming up and entering buildings and staying there and that's how through air it really works on us, as opposed to being outside where air comes through and takes it away.

MR. PRICE: Yes.

MR. BLANCO: Sherban's is farther from here than other buildings where there are a lot of people there every single day; for example, the high school.

When we talk about the gases coming up and entering buildings, has any testing been done in places of mass gathering, like the high school?

MR. PRICE: No.

We have focused on an area of residents -- primarily, residences that are in the area where the groundwater contamination of TCE is actually shallowest. So, when you get farther away, the groundwater contaminants dive deeper and there's actually a cleaner zone on top and the vapor concern doesn't exist.

So, our testing thus far has been essentially between the site and -- you know, the plume kind of moves this way. It's shallowest sort of along the brook and then just on the other side, actually right here.

So most -- we've tested around the facility, and Diego can speak to the numbers. And what we do is we -- what happens, there's TCE in the groundwater. It can migrate up through the soil gas, air in the soil, and collect underneath the building. And then particularly in the wintertime, when the heating system goes on, your house actually kind of draws in that soil gas from underneath the house.

So, what we do in the wintertime, primarily, in this part of the country, is we actually collect samples from holes drilled right below foundations to measure whether there's TCE or other constituents in the soil gas. And we've gotten permission from many homeowners in the area.

MR. GARCIA: We've sampled 52 properties.

MR. PRICE: 52 to date.

MR. GARCIA: To date, yeah, that have given us access.

We've asked for access from many

more.

MR. PRICE: Does that include from before the remedy of...

MR. GARCIA: Yes, but several of them were done multiple times.

MR. PRICE: Okay. So, we've resampled a number of properties that are in sort of the core of the area.

So, again, when the groundwater is shallowest and it's contaminated, and where the houses -- there are houses -- in this particular area, there are houses over the plume. That's where we're concerned. We have had found nothing, none. In no houses have we found material in the soil gas under the house.

What we committed to was we realized that this could be a dynamic changing circumstance and that we needed to have a long-term understanding of what was happening with soil vapors. And, so, every winter we do more sampling.

And we're happy to discuss where

else we might sample. We have a plan, you know, the zone that's -- sort of expanding it, do we want to narrow or we'll expand a little further where we've been testing.

But we're happy to discuss with you or other folks where -- what other areas we might look at.

MR. BLANCO: Thank you.

MS. SEPPI: Thank you for your comments and questions.

Are there any other questions or comments?

I just want to mention too that this presentation, I'll post it on the EPA website once I get it from Mark electronically. So, in a day or two, if you're interested in taking a look at it, it should be there. And our EPA web address is on the back of the Proposed Plan also, at the end of it, if you need to see that.

Thank you so much. We really appreciate you coming out. We appreciate all your good comments and questions.

And the next thing that you'll hear from us will be the Record of Decision.

Thank you.

(Time noted: 9:14 p.m.)

CERTIFICATE

STATE OF NEW YORK)
) ss.
COUNTY OF NEW YORK)

I, LINDA A. MARINO, RPR, CCR, a Shorthand (Stenotype) Reporter and Notary Public of the State of New York, do hereby certify that the foregoing transcription of the Public Meeting held at the time and place aforesaid is a true and correct transcription of my shorthand notes.

I further certify that I am neither counsel for nor related to any party to said action, nor in any way interested in the result or outcome thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this 4th day of November, 2014.

Linda A. Marino

LINDA A. MARINO, RPR, CCR

Attachment D
Written Comments

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December 15, 2014

Sent Via Email (austin.mark@epa.gov) & Overnight Mail

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Subject: Cornell-Dubilier Electronics Superfund Site
South Plainfield, New Jersey

Re: Comments to Proposed Plan for Operable Unit 4
Robert M. Zoch, Jr., P.E., on behalf of Exxon Mobil Corporation

Dear Mr. Austin:

Please find enclosed comments to the Proposed Plan for Operable Unit 4 in relation to the Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, prepared by Robert M. Zoch, Jr., P.E., on behalf of Exxon Mobil Corporation ("Exxon").

Respectfully submitted,

HOLLAND & KNIGHT LLP

/s/ Duvol M. Thompson

Duvol M. Thompson

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December 15, 2014

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Subject: Cornell-Dubilier Electronics Superfund Site
South Plainfield, New Jersey

Re: Comments to Proposed Plan for Operable Unit 4
Robert M. Zoch, Jr., P.E., on behalf of Exxon Mobil Corporation

Dear Mr. Austin:

I have been asked by counsel for Exxon Mobil Corporation ("Exxon Mobil") to offer written comments to the recently Proposed Plan for Operable Unit 4 ("OU4") of the referenced Superfund Site ("the Site"). Exxon Mobil is the potential indemnitor of certain insurers against whom Cornell-Dubilier Electronics ("CDE") has brought a claim for coverage related to the Site.

I am a chemical engineer and a registered professional engineer in Texas. I began working at a pharmaceutical chemical facility as an undergraduate and became involved with the plant's environmental compliance efforts under State regulations in 1965. In 1972, soon after formation of the EPA, I began meeting with representatives of Region 2 concerning an enforcement action under the Rivers and Harbors Appropriation Act of 1899 against a sister company operating on the Hudson River in New York. After serving as Director of Environmental Control for the parent corporation, I formed an independent environmental consulting company in 1974 and developed a practice in industrial waste management and remediation under the Resource Conversation and Recovery Act ("RCRA") and the Comprehensive Environmental, Compensation and Liability Act of 1980 ("CERCLA" or "Superfund"). Over the past 35 years, I have actively participated in virtually every aspect of the Superfund process, involving hundreds of sites.

In 2011, I was asked to evaluate the status of the Cornell-Dubilier Electronics Superfund Site and, during the current year, I have followed the development and issuance of a Stakeholder Information Report in March, the Remedial Investigation ("RI") Report in July, the Feasibility Study ("FS") Report in October and the Proposed Plan at the end of September, all concerning OU4 of the Site. Throughout this process, and subject to review and comments by the National Remedy Review Board ("NRRB") and private party stakeholders, Region 2 has maintained an essentially unwavering path to remedy selection for its four defined elements of OU4.

In April, I assisted in preparing comments submitted to you based upon the preliminary remedy presented in the Shareholder Information Report during the NRRB review process. Now, with the benefit of the Final RI/FS Reports and a description of the remedy selected by Region 2 in the Proposed Plan, this analysis has been sharpened. Therefore, based upon my experience with several Superfund Sites dominated by polychlorinated biphenyl ("PCB") contamination, and my review of the RI data and factual information now made public for the CDE Site, I offer the following comments to the Proposed Plan for OU4 of the CDE Site on behalf of Exxon Mobil Corporation. The first two comments summarize relevant factual background information, with comments to the four elements of Proposed Plan following.

1.0 Nature of the Response – As summarized in the Proposed Plan, the former CDE capacitor manufacturing plant was determined to be a significant source of PCB contamination based upon environmental media testing performed by the New Jersey Department of Environmental Protection ("NJDEP") between 1994 and 1996. In July 1998 the Site was placed on the National Priorities List ("NPL") for Superfund action and, soon thereafter, extensive PCB contamination was discovered at nearby off-site properties and within Bound Brook sediment adjacent to, and downstream of the Site. Over the past 15 years of Superfund action, a significant database has been assembled, concluding that:

- while other historical contaminants are also present in the area, PCB is the overwhelming constituent of concern, and response actions taken to manage PCB contamination are sufficient to address Site risks;

- contamination of the Site and its surroundings was caused by PCB releases to the air and to Bound Brook during plant operations and by PCB releases from an on-site dump that are continuing;

- it was appropriate to divide the Superfund response into operable units ("OUs") to incrementally address contamination through separate investigation and cleanup efforts;

- initial response actions were taken for PCB **source control** at the former manufacturing plant (OU2) to reduce and to ultimately eliminate further releases from buildings and the on-site process waste dump. Completion of this source control remedy is one element of the current OU4 Proposed Plan;

- responses for **management of migration** of PCB contamination have been evaluated and implemented to: (i) remove PCB contamination released to surrounding properties (OU1); (ii) evaluate groundwater contamination and conclude that it is technically impracticable to restore underlying groundwater quality (OU3); and (iii) address PCB releases to surface water, stream sediment and floodplain soils of Bound Brook (OU4).

2.0 Nature of the Contaminant of Concern

PCBs are a class of synthetic chlorinated organic chemicals which were manufactured in the United States beginning in 1929, and which found widespread application in industrial and consumer products due to their stability, low flammability and electrical insulating properties. Because of these characteristics they became the preferred dielectric fluid to insulate electrical transformers and capacitors from potentially damaging stray currents. PCBs were used by CDE in its capacitor manufacturing operation for this purpose.

During the late 1960s, the chemical stability properties of PCBs contributed to growing evidence of their persistence and bio-accumulation in animal and human tissue, and concerns were expressed over their potential toxicity. This led the only US manufacturer of PCBs to discontinue production for certain applications and, in 1979, to a total ban on PCB manufacturing in the U.S. under the Toxic Substances Control Act ("TSCA").

Some of the chemical properties of PCB are responsible for the CDE Site being placed on the NPL for Superfund response action. These include:

- **Persistence** – Even though much of the PCB used for capacitor production at CDE occurred during World War II, its presence and potential release to the environment continues today, over 70 years later;

- **Toxicity** – Extensive testing since 1970 has determined that PCBs are harmful to human health and ecological receptors, resulting in the continued posting of fish consumption advisories for the Bound Brook watershed since August 1977.

- **Hydrophobic** – PCBs are known to be extremely hydrophobic (incompatible with water) and, due to their extremely low water solubility (12 parts per billion ("ppb") for the primary PCB product found at the Site), they are not subject to significant migration into the environment as dissolved contaminants in surface water or groundwater. Rather, they tend to bind (adsorb) onto solids such as building surfaces, atmospheric dust and silt particles, and can then be dispersed as contaminated solids.

- **Stability in the Environment** – Once released onto solid particles, PCBs do not evaporate or dissolve into water to any appreciable extent and, although they eventually degrade to relatively harmless constituents, the time required for this to occur is substantial.

3.0 Comments Concerning the Proposed Plan for Capacitor Debris ("CD")

A review of historical aerial photography and discovery materials from litigation related to the Site demonstrate that large amounts of production waste and rejected capacitors were disposed on-site by filling low-lying areas of plant property (including locations adjacent to Bound Brook), open burning of debris, and eventually covering the dump with soil. Continuing releases of PCB from this "source material" have resulted due to storm water erosion of impacted soils and debris into Bound Brook and migration of fine particles containing adsorbed PCB into surface water and underlying groundwater. The presence of this dump and its environmental impacts resulted in the issuance of a record of decision ("ROD") for its removal under the response action for OU2 of the Site. Implementation of the remedy resulted in the off-site disposal of nearly 15,000 yd^3 of debris and on-site thermal treatment of over 100,000 yd^3 of soil containing PCB concentrations greater than 500 ppm and up to 140,000 ppm (i.e., 14%). Since the excavations performed under the OU2 Remedy to remove these materials generally stopped at the CDE property boundary, it is not surprising that subsequent testing of soils closer to Bound Brook demonstrate the presence of additional volumes of source materials containing up to 3,000 ppm PCB remaining in off-site locations (including some across Bound Brook), subject to continuing erosion and impacts to surface water and ground water.

CD agreement

answer

It is critical that this source material be removed in order to eliminate further PCB releases from the Site. Based upon experience gained in constructing the OU2 remedy, however, it is doubtful that the proposed remediation goal of 1 ppm PCB can be achieved or that it is even necessary, given that higher levels of PCB remain beneath the OU2 cap adjacent to this area. The more realistic cleanup goal is remediation to residual PCB concentrations "as low as reasonably achievable" which will likely require excavation of contaminated soils to shallow bedrock in some locations. Therefore, a pre-design investigation to determine the depth to bedrock beneath the proposed excavation footprint should be performed in order to evaluate necessary construction procedures adjacent to, and likely below, the Bound Brook stream channel.

answer costs

The estimated cost for the selected CD-4 element of the Proposed Plan ($32,800,000) appears excessive since part of the OU2 remedy in 2008 removed about half that volume of similar material at a cost of $5,507,000. Although excavation adjacent to Bound Brook will be more challenging, if conducted simultaneously with dewatering and excavation of Bound Brook sediment at that location, this element of the OU4 response action should be completed at considerably less cost than estimated. Based upon the experience gained in applying on-site thermal treatment to soils from the OU2 remedy, I agree that off-site landfill disposal of excavated debris/soil is the preferred alternative for management of excavated materials.

4.0 Comments Concerning the Proposed Plan for Sediment/Floodplain Soils ("SS")

This element of the Proposed Plan is the most extensive, and includes the rehabilitation of areas downstream of the former CDE plant that have been impacted by off-site migration of PCB adsorbed onto soil particles. My comments to the SS-2 alternative selected under the Proposed Plan follow:

4.1 Regional Flood Control Project – The Proposed Plan identifies the Green Brook Flood Control Project (the "Flood Project"), only as a basis for excluding in-place contaminant capping alternatives. The scope of the Flood Project is substantial, however, and even preliminary plans for its implementation must be considered as they may affect the SS element of the remedy.

The Flood Project encompasses 65 square miles, portions of three counties, and the entire length of Bound Brook and its tributary Cedar Brook. It is being administered by the New York District of the Corps of Engineers ("COE") in partnership with the NJDEP, and is projected to cost in excess of $400 million to provide basin-wide flood protection for the 150-year frequency event. Construction began in 1999 to protect the Borough of Bound Brook, and planning for the South Plainfield segment of the project is underway. The remedial design for SS-2 of the Proposed Plan must consider the objectives and impacts of the Flood Project, as well as potential cost-sharing opportunities. This should not be difficult to accomplish since the COE will be responsible for administering both of the designs and construction programs.

4.2 Sediment Removal – The Proposed Plan includes removal of sediment containing more than 1 ppm PCB from Bound Brook between the Site and New Market Pond (34,000 yd^3), from New Market Pond itself (99,000 yd^3), and from "hot spots" downstream of New Market Pond (1,000 yd^3).

For Bound Brook, the construction preference for removing sediment is to divert the stream flow in segments and excavate impacted sediments after dewatering. This was the technique recently employed for sediment removal at a similar stream in Michigan (Portage Creek),[1] which was demonstrated as a successful and cost effective methodology for PCB sediment removal from a small stream. The techniques applied in implementing that project

[1] Portage Creek is a tributary of the Kalamazoo River and part of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site in southwest Michigan, listed on the NPL due to PCB contamination. The portion of Portage Creek cleaned up in 2013 (length, width, depth, PCB contamination) is almost identical to the Bound Brook sediment removal element of the Proposed Plan.

should be incorporated into the Bound Brook sediment removal action.

New Market Pond sediment, on the other hand, was dredged by the Town of Piscataway during 1985-1986, well after operations ceased at the CDE plant. Recent data reflecting sediment PCB concentrations consist of 32 samples taken from nine low resolution cores and additional samples from one high resolution core from the 17.6 acre pond. The low resolution core data demonstrate that maximum PCB concentrations in New Market Pond are less than 5 ppm in the upper 18 inches of sediment, with rapid attenuation to background or undetected concentrations below that horizon. While slightly elevated above the sediment PRG of 1 ppm, these sparse data are insufficient to warrant dredging 99,000 yd^3 of sediment from New Market Pond. The high resolution core, however, contained elevated sediment PCB concentrations, including 11 ppm near its surface. As suggested in the 2014 RI Report, this single result may indicate higher PCB levels in isolated areas of New Market Pond that may not have been dredged during the 1980s and/or that currently exceed 1 ppm.

Downstream of New Market Pond, sediment PCB levels decrease to background or undetectable levels, except for two minor hot spot areas of quiescent flow where sediment has accumulated historically.

An analysis of all these sediment PCB concentration results demonstrates that:

- Bound Brook stream sediments found adjacent to the former CDE plant and downstream to the headwaters of New Market Pond contain elevated PCB levels, with about half of those samples exceeding 1 ppm;

- New Market Pond acts as a sedimentation basin for sediments transported downstream by erosional effects, and hot spot PCB levels may exist in areas of the pond which were not dredged during the 1980s or have since been recontaminated;

- small sedimentary areas containing elevated PCB levels occur downstream of New Market Pond in relatively low-volume contaminant hot spots.

These observed conditions support conduct of a significant pre-design investigation ("PDI") of sediment contamination in these three reaches of the Bound Brook basin as suggested by the 1,600 sediment samples proposed for this purpose in Table 7-2 of the FS Report. The estimated cost of $3,000 per sample for the PDI appears excessive, however, considering that:

- the only analytical parameter that exceeded its PRG identified in Tables 3-3, 3-5 and 3-7 of the FS Report was total PCB;

- total PCB analytical costs are less than $100 per sample (even less in large quantities) and sampling costs should not exceed that value;

- PCBs were determined to be generally co-located with other contaminants such as metals, polyaromatic hydrocarbons ("PAHs") and pesticides that would be removed along with the primary PCB contaminant.

Therefore, in the development of the work plan for the sediment PDI, consideration should be given to performing an even more extensive PCB delineation (e.g., testing more sediment samples for total PCB) and significantly reducing or eliminating the number of samples subject to more extensive contaminant analysis. Thus, the excavation/dredging remedy can be optimized to selectively remove hot spots and sediment horizons that exceed the PRG criterion in New Market Pond as is proposed for downstream locations. This methodology would be more ecologically friendly than extensive sediment dredging in New Market Pond.

4.3 Floodplain Soils – The Proposed Plan for excavation of 150,000 yd^3 of floodplain soils to depths of up to five feet is neither necessary nor consistent with the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"). The following facts support this conclusion:

4.3.1 Data Quality – Some data, allegedly representative of floodplain soils, are based upon samples collected from 0-2 inches below grade during 1999 which were not resampled during the 2011-2013 RI soil sampling events. Most of the reported PCB concentrations in those samples were less than 5 ppm, and are undoubtedly not representative of current conditions 15 years later. Additionally, many of the recent

PCB data were flagged by the laboratories performing the analyses as "J" (estimated values below method detection limit). As stated in the RI Report, "detectable values are considered five times the laboratory detection limit," resulting in these data being of questionable value.

4.3.2 Remediation Goal – While a remediation goal of 1 ppm PCB is reasonable for PCB contaminated sediment in order to ultimately reduce fish tissue impacts, it is not necessary for floodplain soils because:

- it was determined through the RI/FS process that floodplain soil PCB contamination is not impacting stream sediment;
- the 1 ppm value was determined in the site-specific risk assessment as an appropriate "residential" value for direct contact exposure by a child. All residential exposures to PCB releases were addressed under the OU-1 ROD, and there are no current or projected future residential exposures attributable to OU-4;
- the EPA's Superfund guidance[2] identifies a PRG starting point for PCB based upon non-residential land use of 10 to 25 ppm. The Site-specific exposure classification identified by the EPA in this matter is referred to as a "residential-parklands" land use, described as a conservative scenario. The NCP requires that remediation goals be "protective" not "conservative", and this arbitrary exposure definition and PRG of 1 ppm are inconsistent with the NCP;
- even the Ambrose Brook area floodplain soil evaluated as a reference area for this matter contained PCB concentrations up to 1.6 ppm, greater than the proposed 1 ppm PRG.

Therefore, a Performance Standard Goal of 5 ppm PCB, which was determined

[2] U.S. Environmental Protection Agency, Guidance on Remedial Actions for Superfund Sites with PCB Contamination, EPA/540/G-90/007, August, 1990; this document is cited as relevant to this matter in the RI/FS documentation.

protective in the Portage Creek project mentioned earlier, or the approximate 2 ppm PCB level achieved during implementation of that response action would be protective of the actual current and future land use anticipated for exposure to Bound Brook floodplain soils.

4.3.3 Application of Direct Contact Criteria – Direct contact criteria apply to potential exposures to surface soils, defined as the upper two feet of soil (or a minimum depth of 10 inches under the PCB Spill Policy of TSCA). Therefore, an excavation depth of up to 5 feet estimated in the Proposed Plan is inconsistent with a response to surface soil exposure criteria. In its response to the NRRB comment on this issue, Region 2 confirmed that its original proposal for excavation to an average depth of 5 feet was too conservative, and that it was modifying the plan for excavation to an average depth of 3 feet (2 to 3 feet in upland areas and up to 4 to 5 feet along the stream banks). These proposed excavation depths are still in excess of the two foot definition applicable for surface soil direct contact criteria and should be further reconsidered for excavation only to the depth at which a properly developed PRG is exceeded and to a maximum depth of two feet.

4.3.4 Extrapolation of Limited Data – The spatial distribution of floodplain soil PCB contamination was estimated by applying the Thiessen polygon Method for extrapolation of the relevant data. However, that method is applicable for **interpolation** between data points, not for **extrapolation** outside areas of data coverage. The arbitrary construction of polygons in the FS Report to specify locations of PCB contamination does not comport with the Thiessen Method, and is improperly applied for estimating areas of concern for remediation purposes.

4.3.5 Analysis of RI Data – Recent PCB data presented in the RI Report include soil concentration data from borings performed over numerous floodplain transects, within four grid areas, and others randomly distributed within the floodplain between Bound Brook and Cedar Brook near their confluence. An analysis of the resulting data is summarized as follows:

- **Transect Data** – Of the 126 data points reported in the RI, 65 were obtained from 0 to 1 foot below grade and 61 from 1-2 feet. Therefore all of these data could be evaluated under "surface soil" exposure criteria.

  Only two of these values exceeded 10 ppm total PCB, both within Transect 17, located upstream of the Site and reported to be addressed as part of the Woodbrook Road Dump Superfund Site response. After eliminating the Transect 17 data, 83% of the remaining data points are below 1 ppm and none exceed ten times that value (10 ppm). These data would, therefore, meet the 75%/10x guideline[3] for statistical compliance even with a 1 ppm surface soil exposure criterion.

- **Grid Data** – High concentrations of PCBs were identified in floodplain soils in Grids A and B, with almost all of the values greater than 1 ppm distributed near the banks of Bound Brook. Only one sample result from deeper than two feet exceeded 1 ppm of total PCB.

- **Veterans Memorial Park Data** – Random data collected from 26 acres of the floodplain in Veterans Memorial Park located between Bound Brook and Cedar Brook were analyzed for total PCBs. Concentrations of PCBs greater than 1 ppm were confined to a low-lying, 10-acre area north of Bound Brook where 7 soil samples and 3 sediment samples (indicative of wetlands) which were obtained from 0 to 6 inches below grade ranged from 2 to 77 ppm.

Based upon this analysis of the RI data, it appears that, even if a 1 ppm direct contact PRG were applied for floodplain soil remediation, only limited excavations along the banks of Bound Brook and within a 10 acre portion of Veterans Memorial Park would require excavation. The anticipated PDI for the floodplain soil remedy proposes that 1,000 additional soil samples be obtained. These samples need only be analyzed for total PCB and should be advanced within relatively close grids stepping out from the stream banks to determine the true impacted areas. Following

[3] The 75%/10x guideline is a compliance averaging procedure recognized by the NJDEP for direct contact exposures and groundwater protection. Under this guideline, if 75% of the sample data are below the remediation standard and none exceed the standard by more than a factor of 10, no further action is necessary.

excavation to a maximum depth of two feet for surface soil exposures as directed by the resulting database, confirmation testing should be based on surface-weighted average concentrations including the 75%/10x statistical criterion.

5.0 Comments Concerning the Proposed Plan for Groundwater (GW)

The GW remedy presented in the Proposed Plan was selected to mitigate the discharge of PCB contaminated porewater present in the bedrock matrix due to its potential for future recontamination of remediated sediments in Bound Brook.

A significant portion of the RI Report attempts to support the hypothesis proposed in the Conceptual Site Model ("CSM") that bedrock porewater is currently contributing to stream sediment contamination. The "lines of evidence" presented in the FS Report are unpersuasive, the ultimate result is inconclusive and, as stated several times in the RI Report, the contribution of the sediment PCB load attributable to groundwater cannot be estimated. Based upon the data, the presence of a measurable impact of groundwater to sediment cannot even be factually established.

MIT

As reported in the RI, it has been determined that, under current conditions, Bound Brook is a gaining stream,[4] particularly under low flow conditions. Even so, most of the ambient water quality data have not detected the presence of PCB, and the maximum PCB concentration in surface water measured during the OU4 RI was 0.0011 micrograms/liter (ppb) in a sample adjacent to the former CDE plant. The water solubility of PCB-1254, the dominant material identified at the Site, is 12 ppb. Because the amount of PCB in Bound Brook surface water is a minute percentage of its water solubility, it will not precipitate to the sediment and, even if it contacted the sediment, **would not result in a measurable impact**. Therefore, even under current site conditions which result in continuing bedrock porewater impacts from remaining capacitor debris, there is a negligible risk of downstream sediment contamination.

AM

Furthermore, under CERCLA practice, contaminated groundwater is not considered "source material" impacting other media. The root source of detected PCB concentrations in porewater is the remaining soil/debris containing thousands of ppm PCB and located on both sides of Bound Brook, downstream of the twin culverts at the Site. As determined in the RI Report, most of the PCB

[4] The term "gaining stream" describes a watercourse whose water level is lower than the potentiometric head of local groundwater, allowing flow through underlying porous media to transmit ground water to the surface water unit.

loading to the water column occurs within one-tenth of a mile downstream of the twin culverts at the precise location of this adjacent debris. Implementation of the CD-4 remedy will finally eliminate this source of continuing porewater contamination and the potential groundwater migration pathway for source material.

The GW-3 remedy selected in the Proposed Plan, with an estimated net present value cost of $23,300,000, is not supported by the facts and is not necessary to prevent post-remediation sediment recontamination.

Considering the relevant facts, there is no evidence that future releases of groundwater to Bound Brook could result in measurable sediment recontamination and, as expressed by the Supreme Court concerning agency initiatives:

wow

> *"[T]he agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'...In reviewing that explanation, we must consider whether the decision was based on a 'consideration of the relevant factors and whether there has been a clear error of judgment'... Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise."*[5]

no

The purported basis for a groundwater remedy to prevent future sediment recontamination is not supported by the evidence, and the appropriate alternative for this element of the remedy for OU4 is No Action, with extension of the ARAR waiver for groundwater standards and the continued monitoring already established under the OU-3 (Area Groundwater) remedy.

6.0 Comments Concerning the Proposed Plan for Replacement of a Water Line (WL)

The Proposed Plan for replacement of a New Jersey American Water ("NJAW") water main that crosses the Site "is based upon an expectation that the existing line will eventually fail and, at the time of failure it would need to be replaced..." The NJAW regularly replaces aged segments of the

[5] *Motor Vehicle Manufacturers Ass'n v. State Farm Mutual Automobile Insurance Co.*, 463 U.S. 29, 43 (1983).

potable water system under its Distribution System Infrastructure Improvement System ("DSIIS") program. Although the 36-inch water main crossing the Site is aged, it is a 2-inch thick cast iron pipeline which does not have a history of breaks and is not expected to fail under the current DSIIS planning horizon. NJAW believes the leak that occurred during soil excavation of the OU2 remedy resulted from heavy equipment damage caused by the remediation contractor. really

The reasonable methodology for addressing this issue is by imposition of institutional controls, including restrictive easements and notification to the NJAW of potential environmental concerns associated with line failures or rehabilitation. This is a common practice at other Superfund sites where utilities cross portions of remediated facilities, even where remediation under a ROD has left residual contaminants in place, as here. Utility replacement as suggested in the Proposed Plan is not among response actions considered in the NCP, and considering Superfund budget constraints, should not be an element of the EPA's selected remedy for this Site.

In summary, there are some elements of the Proposed Plan which, based upon CERCLA practice and my experience in similar Superfund matters, are not necessary or are inconsistent with the NCP. Some of these deficiencies can be corrected during the Remedial Design ("RD") process, but others require reconsideration of certain proposed actions altogether.

Very truly yours,

Zoch Consultants, LLC.

Robert M. Zoch, Jr., P.E.

RMZ/sg

Mr. Mark Austin
Remediation Project Manager
USEPA, Region 2
290 Broadway, 19th Floor
New York, New York 10007-1866

December 15, 2014

Re: Cornell Dubilier Electronics Superfund Site
Proposed Plan Operable Unit 4- Bound Brook
South Plainfield, New Jersey

Dear Mr. Austin,

On behalf of the following nonprofit organizations, Edison Wetlands Association (EWA), owner and operator of the 40-acre Triple C Ranch and Nature Center; New Jersey Sierra Club; New Jersey Conservation Foundation; Raritan Riverkeeper; please accept these stakeholder comments for the USEPA's Proposed Plan for Operable Unit 4 (OU4) of the Cornell Dubilier Electronics (CDE) Superfund Site.

The comments below reflect our review of the USEPA technical documents and summary of the RI/FS and Proposed Plan for OU4 at the Cornell-Dubilier Electronics (CDE) Superfund Site, South Plainfield, New Jersey from USEPA. This also includes our collective knowledge of the Bound Brook, the site and the various operable units from our long-term involvement.

EXECUTIVE SUMMARY

While we applaud USEPA for finally conducting the 10-mile Bound Brook Study, we are extremely concerned and disappointed that this study has taken over 20 years to complete and the delays have caused the Bound Brook, its biota and the public to be further contaminated. The long delay in addressing this highly contaminated leaking Superfund site and its various operable units has caused the release of site-related contaminants, increasing the risk to human health and the environment. USEPA must act in an expeditious manner on the remaining issues at the CDE Superfund site and immediately address the other outstanding unacceptable human health and environmental exposures that continue to be released.

USEPA identified other potential impacts to the Bound Brook and its upgradient tributaries, which are not adequately addressed in the Proposed Plan for Operable Unit 4. These ongoing surface water and sediment contamination sources must be addressed and mitigated as part of the Proposed Plan for the Bound Brook. The following areas were identified in the USEPA Study:

> *"Three former facilities were identified, located outside the OU4 Study Area but near Bound Brook or a tributary upstream of the former CDE facility, including: Tingley*

*Rubber Corporation (a former manufacturer of rubber footwear), Gulton Industries, Inc./Hybrid Printhead (a former industrial site), and Chevron Chemical Company/Ortho Division (a former pesticide manufacturer) and adjacent industrial properties (Figure 1). Note that the OU4 Study Area upstream of RM7.4 includes only the Bound Brook corridor, since the floodplains are being managed as part of the Woodbrook site. The OU4 Study Area also includes two major tributaries: the unnamed tributary near New Brunswick Avenue at RM 4.7 (Figure 2) and the unnamed tributary near Elsie Avenue at RM5.5 (Figure 3)." (p.10) (See Attachment 3. **Source:** Cornell-Dubilier Electronics Site, Operable Unit 4 – Bound Brook, South Plainfield Borough, Middlesex County, New Jersey; Stakeholder Information Package, EPA Region 2, March 2014)*

Because this CDE related contamination spans such a vast, widely used area, the USEPA must remove all PCBs and other contamination identified in the study area. USEPA must stop the discharge of site related contaminates that are actively discharging into the Bound Brook from CDE and Woodbrook Road Superfund Site. USEPA must also mitigate and remediate any other sources of surface water or sediment contamination if this cleanup is to be considered effective. In addition to eliminating all surface water and sediment contamination sources that pose any risk to human health or the environment, USEPA must fully restore the environmental integrity of the entire Bound Brook so the public can once again enjoy this beautiful natural resource.

The Bound Brook is the only water body in the state of New Jersey that has a "do not consume any fish in any amount by any risk group" advisory. This is due to the PCBs that have been released at the CDE Superfund Site and failure of regulatory agencies to act responsibly and in a timely manner. This advisory and the ongoing releases are not acceptable and the USEPA must fully mitigate this ongoing human health and ecological disaster. Under the federal Clean Water Act and other federal and state statutes, the government has the responsibility to restore the waters of the United States and make them swimmable, fishable and drinkable. USEPA has accepted the responsibility of addressing the risk posed by two Superfund Sites in the Bound Brook. USEPA must address all contamination sources in the Bound Brook and its tributaries and restore the biota that threatens human health and the environment.

We strongly recommend that USEPA remove all the toxic PCBs from the Bound Brook and New Market Pond so that there are no further threats to human health or the environment, as well as stop all sources of on-going contamination. USEPA has a unique opportunity to leave a legacy of a clean and restored Bound Brook, especially in this regionally important Dismal Swamp Conservation Area. Central New Jersey families are counting on the USEPA to clean the Bound Brook to levels that are protective of human health and the environment, make the Bound Brook's fish safe to consume again, make the waters safe to drink, and make the stream corridor safe to swim or wade through.

SPECIFIC COMMENTS AND RECOMMENDATIONS:

Additional Capacitor Disposal Areas

USEPA must investigate if there are other potential capacitor disposal areas upgradient from the CDE Superfund site. USEPA and other regulatory agencies have confirmed the upstream Woodbrook Road Superfund site in the Dismal Swamp Conservation Area (DSCA) (NJDismalSwamp.org). PCB capacitors and capacitor pieces came from the Cornell Dubilier Electronics Superfund Site. USEPA must carefully investigate the three up stream landfills between the CDE Superfund site and the Woodbrook Road Superfund site. The USEPA must also investigate the South Plainfield Public Works garage property for capacitor disposal areas. USEPA must conduct intrusive investigations into these landfills and public works garage property. High levels of PCBs, TCE and other chemicals at the CDE Superfund Site and Woodbrook Road Superfund Site, (a second CDE Capacitor Disposal Area), have negatively impacted drinking and surface water, sediments, flora, fauna, and the surrounding community for almost 100 years. These three landfills between the CDE and Woodbrook Road Superfund Site have never been checked and are currently heavily used as sports fields where children play daily. Residents have reported that this area was used for dumping of chemicals and those reports have been passed on to the municipality, state and USEPA.

This would not be the first time that South Plainfield has used unremediated landfills. At the Veterans Memorial Park summer camps where toxic black goo that turned out to be a phenolic resin was allowed in areas where summer camp was held and children played sports. Site inspections and testing of the area also revealed asbestos and PCBs that were later identified as emanating from the CDE site. It was only after EWA sampled the black goo, asbestos, and PCBs did South Plainfield close the park and hire a contractor to conduct a partial remediation in order to remove the contaminants. (See Attachment 1)

Now that USEPA has found upgradient sources of PCBs in the surface water and sediments in the Bound Brook above the CDE site, USEPA must investigate the sources of the PCBs. USEPA must test those unremediated landfills for CDE related wastes since they are currently being actively used as sports fields. USEPA must also include test pits in the unremediated landfills since children frequently play on these landfills and their parents are unaware they are not sports fields but unremediated landfills.

USEPA allowed the rear of the capacitor disposal area at the CDE site to be used as a trail for children for years before they closed the site off to children bicycling and playing. USEPA must not allow the same potential exposure to continue without investigating these areas. All these disposal areas were areas of opportunity for the CDE employees to dispose of capacitor and capacitor pieces. It is common knowledge that during the time that Woodbrook Road Superfund site and other disposal areas operated there was no such thing as a strictly municipal waste landfill. Municipalities allowed whatever came through the gates and often things came in at night and weekends. Half of the Superfund sites in New Jersey were former landfills, so these areas must be checked in order to verify that they do not contain capacitors, capacitor pieces or other chemicals from the CDE Site.

NJDEP "Do Not Eat" Fish Advisory

This investigation conducted by the USEPA, NJDEP and other state and federal health agencies over the last several years have attempted to quantify the on-going chemical impacts of the CDE Superfund site and the Woodbrook Road Superfund Site. This investigation has caused the Bound Brook to be considered to be one of the most toxic water bodies in the state of New Jersey. This is due to the alarmingly high levels of PCBs that have been found in the fish and other biota that migrate throughout the Bound Brook.

> <u>As indicated by the USEPA NRRB Stakeholder packet:</u>
> *The Bound Brook watershed is unique among fishable waterways in New Jersey in having a waterbody-specific advisory of "do not eat," inclusive of both the general population and high-risk populations, covering all species of fish and shellfish. The advisory is based upon fish tissue levels of PCBs, which, as of 2006, were are consistently the highest measured in the state.[3] This fishing advisory was put in place after EPA began its response at the site, in the late 1990s. The region has worked with New Jersey to maintain "do not eat" signage along the Brook since that time, in English and Spanish.*
> *Public awareness of the PCB contamination, in addition to the fish consumption advisory, has probably resulted in less recreational activity than would occur if there were no consumption advisories. However, fishing has been observed, as has consumption of the catch, despite the advisory. The primary access point for fishing is at New Market Pond. Estimates of consumption rates for OU4 were based on rates expected to occur if the brook and the biota were not contaminated and in the absence of consumption advisories. This approach is consistent with EPA policy (EPA, 1990a)." (p. 18) (See Attachment 3. Source: [3]Routine Monitoring of Toxics in New Jersey Fish, Third Year (2006) of Routine Monitoring Program, New Jersey Department of Environmental Protection Division of Science, Research and Technology.)*

The fish species present in the Bound Brook are exposed to dangerous levels of PCBs in the contaminated sediments and surface water. USEPA and NJDEP have tested these fish from the Bound Brook that led the NJDEP to issue an advisory of "Do Not Eat" for all the fish species in the Bound Brook, including Spring Lake and New Market Pond. (See Attachment 4)_This exposure of PCBs has led to the bioaccumulation in the fish tissues that are harmful for human consumption. Human exposure to PCBs disrupt liver and thymus functions, causes tumors, impairs the immune system, and causes improper development of palate, teeth, and reproductive organs. Exposure to PCBs and dioxins are also linked to growth abnormalities, cognitive and nervous system disorders, and reproductive failure.

USEPA must conduct a thorough biota study including the testing of fish, mammals and other animals such as bullfrogs, crayfish, turtles and other biota eaten from the Bound Brook for PCBs and other chemicals. USEPA, NJDEP and federal and state health agencies must inform those who eat biota from the Bound Brook and DSCA of the results of the testing of these animals that live, reproduce and migrate through the Bound Brook and its tributaries.

<u>Environmental Justice & Education Campaign</u>

An education campaign must be conducted targeting the low-income subsistence fisherman and hunters with a focus on those whose first language is not English and the newly relocated families. It should discuss the PCB-contaminated fish and the harmful effects of consuming contaminated biota. Additionally, USEPA must address the uncontrolled consumption of fish from these waters, and coordinate with the health agencies on an outreach plan to those who consume poison fish, game and other wildlife. This is a clear environmental justice issue, as these low-income families cannot afford to buy food and rely on the poisoned Bound Brook as their food source. USEPA has stated in the Environmental Justice (EJ) Plan 2014 that environmental justice will be considered in every decision the USEPA makes. The Bound Brook remediation has severe environmental justice implications and the cleanup of this entire water body needs to be carefully considered in the decision-making process. The cleanup and restoration of this important ecological resource is extremely important and cannot be done piecemeal.

Responsible Party Liability

All responsible parties must be held accountable, and their contamination discharging into the Bound Brook must be eliminated. USEPA states in the Stakeholder Information package that "specifically, the OU3 ROD required the further assessment of the potential for release of PCBs from the groundwater to surface water. The USEPA deferred the OU4 remedy a decision on contaminated groundwater that had the potential to discharge to the stream." USEPA must hold all accountable parties for their share of the Bound Brook's cleanup and restoration. USEPA must identify all data gaps and address them prior determining the most protective remedy and require all identified contaminated surface, groundwater, and sediment into the Bound Brook to be fully addressed. The cleanup must eliminate those discharges if the USEPA is serious about the clean up of sediments that poses a risk to human health or the environment.

Middlesex County Water Company stopped the pumping of the groundwater, which resulted in the current release. Their actions must be considered for potential liability due to these actions resulting in an active discharge now occurring in the Bound Brook.

In addition to the Woodbrook Road Superfund Site and CDE Superfund Site in South Plainfield, New Jersey, USEPA has identified other upstream sources in the Bound Brook that must be addressed through enforcement action if necessary. These include the Chevron Chemical/Ortho USEPA RCRA site (Metuchen Road, South Plainfield), Tingley Rubber (South Plainfield), and Gulton Industries (Metuchen). There is sufficient data for these sites that show they contribute to the ongoing release of contamination into the surface water and sediments entering the Bound Brook.

Dismal Swamp Conservation Area

The Bound Brook headwaters begin in the 1,250-acre Dismal Swamp Conservation Area (DSCA), which is the home to over 175 birds, 25 mammals, and 25 reptiles and amphibians species including several that are threatened and endangered. In the last decade, the

American Beaver has returned to the DSCA after being trapped to extinction 150 years ago. It traverses Metuchen, Edison and South Plainfield, New Jersey. The DSCA is the largest contiguous wetlands in Northern Middlesex County and a regionally important ecological resource (NJDismalSwamp.org).

The community and thousands of visitors use the DSCA for increased recreational activities. EWA's Triple C Ranch and Nature Center (TripleCRanch.org) alone attracts thousands of visitors a year. At the farm, regional environmental education programs are hosted for schools, scout groups, special needs groups and many other stakeholders. They use the DSCA as an outdoor living educational classroom. EWA's Environmental Education Program, public events and festivals are an ecotourism destination, and people of all ages to learn about this unique and diverse habitat, get outdoors and enjoy nature and its many benefits.

EWA and their project partners have worked for 25 years to help preserve the DSCA and clean up the Bound Brook so that it is safe for the community, the biota and the breeding and migratory birds and wildlife. One interesting study showed that the bird populations in the DSCA will dwindle as some lose their chance at finding mates due to the altered mating songs of the male birds because the effect of high PCB contamination (See Attachment 6 - The Guardian: "PCB's cause birds to sing a different tune," study conducted by a team of researchers from Cornell University.) Some wildlife species will eventually evacuate the DSCA to a better non-polluted habitat.

USEPA must remove the PCBs and other contamination sources before the contamination threatens to make the DSCA polluted lifeless wetlands. USEPA's mission is to protect human health and the environment including threatened and endangered species. Since the USEPA combined the Bound Brook investigation of both the CDE site and the Woodbrook Road Dump Superfund site, the USEPA must address any contamination sources to the surface water and sediment in the Bound Brook that is within the headwaters in the DSCA. This must include the Bound Brook tributaries that bisect the Woodbrook Road Superfund site in South Plainfield, New Jersey.

USEPA must conduct a comprehensive biota study in the DSCA, which should focus on the Bound Brook Corridor, and the species that live, reproduce and migrate in this area. Many people hunt small mammals and deer, turtles and frogs for consumption. These mammals and amphibians drink the water in the Bound Brook especially where PCBs are actively discharging into the surface water at the CDE site. USEPA must test all biota in the Bound Brook and DSCA and assess if a ban on all biota must be issued.
The DSCA is a unique ecological resource and has undergone a policy change and the public comes to the DSCA on a regular basis to walk on his trails and engage in recreational activity. Now that the USEPA knows that their cleanup delays have caused high levels of TCE and PCBs to be actively discharged into the surface water for "decades possibly even hundreds of years" the stakeholders and public must know the PCB releases impact to the wildlife within the Bound Brook and DSCA.

With the shortage of open space in Northern Middlesex County and the lack of recreational opportunities, the conservation, cleanup and restoration of the DSCA is critical. USEPA must mitigate all pollution sources into the Bound Brook and cleanup and restore the sediments of the Bound Brook so that the stigma associated with pollution do not damage the years of hard work to protect and restore this important ecological area. (See Attachment 5).

<u>Dismal Swamp Preservation Commission</u>

In 2009, the State of New Jersey established a Dismal Swamp Preservation Commission (DSPC), which is comprised of members from the Borough of Metuchen, Edison Township, Borough of South Plainfield, Middlesex County and Edison Wetlands Association. The creation of the State of New Jersey's DSPC reflects a dramatic change in public policy regarding the DSCA. The DSPC is tasked with defining the metes and bounds of this regional important ecological resource, as well as developing a master plan for the future recreational use and management of these important ecological resources such as the USEPA Priority Wetlands that contain the most highly contaminated with PCB-laden sediments. The USEPA Priority wetlands are also known as the Woodbrook Road Superfund Site. The DSPC meets several times a year and has been working diligently on its master plan for the area and other efforts. Since the DSCA the headwaters of the Bound Brook, it is in critical the USEPA to make sure that this state commission is included as a stakeholder, and the proposed cleanup plan is presented to the DSPC. (See Attachment 7 – Cox Book and See Attachment 8 - DSPC)

<u>Woodbrook Road Superfund Site</u>

The Woodbrook Road Superfund Site and the partially buried CDE capacitors and capacitor pieces would have never been found had it not been for EWA discovering them during a site inspection of the DSCA. USEPA first refused to investigate the capacitors and only got involved after the New Jersey Department of Environmental Protection (NJDEP) responded to the EWA call to the NJDEP emergency hotline. (See Attachment 2 - ATSDR Health Consultation Woodbrook Road Superfund Site)

The USEPA's decision to incorporate Woodbrook Road Superfund Site section of the Bound Brook into the cleanup for Cornell-Dubilier Electronics Superfund Site OU4 requires the USEPA to fully delineate contamination into the Bound Brook. The PCB contamination at the Cornell-Dubilier Electronics Superfund Site was identified to have Arochlor 1254, while Cornell-Dubilier Electronics stated to have used Arochlor 1242. USEPA must fully remediate all sources of contamination leading into the surface waters and sediments of the Bound Brook, as well as its tributaries that pose any risk to human health and the environment.

> <u>As stated in the Stakeholder Information Package, the USEPA's remediation goal is:</u> *For discharge of groundwater to surface water, the remedial action objective leads to a preventive goal of eliminating the potential for PCB releases to surface water through a groundwater transport pathway. VOC transport to surface water is also*

> *occurring (primarily 1,2-cis-DCE, a degradation byproduct of TCE), with some limited, localized exposure concerns. But the VOCs mobilize the PCBs, and it is the PCBs, and not the VOCs themselves, that are the primary concern of this component of the remedy. Thus, the remedial alternatives considered address both VOCs and PCBs, with the goal of eliminating PCB loading into stream sediments and surface water. Based upon site-specific modeling, even low levels of PCB releases through this pathway could result in unacceptable exposures in sediments and surface water if perpetuated over the long term. The PRG for this groundwater pathway would, therefore, be evaluated in the same way, by preventing releases to surface water that would result in sediment concentrations in excess of the sediment PRG of 1 mg/kg. (p.22) (See Attachment 3)*

USEPA suggestions that the other PCBs are not related to the CDE site may not be accurate due to the disposal of PCB capacitors and capacitor pieces upstream at Woodbrook Superfund site and possibly other up stream locations. EWA's Technical Assistance Grant (TAG) advisors will review the Bound Brook impact at the Woodbrook site, as there are data gaps in the Bound Brook and the site wetlands. They will also disseminate the data to the public and the USEPA Community Advisory Group.

<u>Chevron Ortho Chemical Site</u>

EWA, USEPA and even the responsible party have conducted sampling of the surface water and sediments. These samples identified continued off-site migration of contaminants from the Chevron Ortho Chemical Site. Pesticides are flowing from the Chevron Chemical facility, via the Railroad Tributary to the Main Tributary, which then leads to the Bound Brook. EWA raised these concerns several years ago to USEPA and provided USEPA with their independent surface water and sediment sampling data and written reports and showed the USEPA in person the on-going releases documenting the ongoing surface water contamination migrating from the Chevron Site into the Dismal Swamp Conservation Area and Bound Brook.

Additionally, a November 2007 Site Characterization Summary Report (SCSR) for the Woodbrook Road Dump Superfund Site states that one pesticide, 4,4'-DDT was detected above the Residential Direct Contact Soil Cleanup Criteria (RDCSCC) at a concentration of 4.37 mg/kg in a sample taken from a wetland area north of Main Tributary (See Attachment 9 - p. 64). The SCSR report goes on to propose that the source of this 4,4'-DDT is from the nearby Chevron Chemical facility, which is located on the corner of Metuchen and Harmich Roads, near the Railroad Tributary.

4,4'-DDT is an organochlorine pesticide that is known to be persistent and to bioaccumulate, possibly leading to birth or growth defects, cancer, and organ-system toxicity. It is extremely dangerous and was banned in the United States in 1972 because of its impact on human health and the environment. According to the SCSR report, four pesticide components were found in the groundwater samples that the report suggests came from the Chevron Chemical facility (See Attachment 9 - p.129). Finding 4,4'-DDT today in amounts exceeding state standards, both on the Chevron property and draining into the tributaries of the Bound Brook, clearly indicates that human health and environmental exposure is not under control.

Furthermore, polychlorinated biphenyls (PCBs) were also detected in all three of the Railroad Tributary surface water samples, which the report attributes to sources along the Railroad Tributary (See Attachment 9 - p.98). The report also states that the Railroad Tributary emanates from the Chevron Chemical property, which implies that the PCB's they detected are potentially flowing from the Chevron property. In addition, there are semi volatile organic compounds (SVOCs) flowing into the Main Tributary from the Railroad Tributary according to the SCSR report (See Attachment 9 - p.124).

USEPA must identify all the sources of off-site migration of chemicals into the Bound Brook and stop any discharges prior to implementing a remedy to prevent any recontamination of the waterway. If the chemicals from other toxic sites surrounding the Bound Brook are still draining into the brook, then all of USEPA's hard work and US taxpayer's hard earned dollars will be wasted.

Groundwater Discharge from CDE OU3

Vapor Intrusion: EWA and all stakeholders need to fully understand the potential impacts to human health and the environment in the Bound Brook from the contaminated groundwater plume, which is also known as Operable Unit 3. This is critical to address the vapor intrusion issue into the Bound Brook and its ongoing contamination and potential vapor intrusion in the surrounding community. The USEPA has not adequately reviewed the potential scope of a vapor intrusion problem based on the handful of samples in a few homes that have been taken in this 825 acre toxic groundwater plume that we now know is at the surface of this large geographic region. USEPA has not done enough vapor testing in the plumes homes, schools, businesses and day care centers to know if there may be potential problems similar to the magnitude of vapor intrusion in Pompton Lakes, New Jersey. In Pompton Lakes, the DuPont Works RCRA site the company dumping caused a similar situation and over 450 homes have poisonous TCE and PCE gases entering their homes. The families of Pompton Lakes have documented health problems linked to the breathing of poison gas because the USEPA took decades to disclose the severity of the problem.

Drinking Water Wells: We are also extremely concerned that there has not been sufficient investigation of potential drinking water wells that are now at risk due to the change in the aquifer system. The dismissal of contaminants in the one well that was identified is disingenuous to the USEPA's mission of protecting human health and the environment, as drinking water is the most important resource for human life. USEPA and their staff must canvas the entire 825-acre toxic groundwater plume community and survey all owners, tenants and residents as to whether they have groundwater wells or use municipal water. There also needs to be a comprehensive testing of all wells that are used in this area where the 825-acre plain extends and a full screening of every home that is in the plume area for vapor intrusion.

Reversal of Groundwater flow: The Middlesex County Water Company decision to stop pumping the wells from Spring Lake changed the flow of the groundwater when the wells in Spring Lake were shut down due to chemicals in the drinking water wells. USEPA waited 20 years to look at the groundwater and then only decided to monitor it. Now, their lack of action has caused the chemicals in the groundwater to actively discharge into the Bound Brook at the CDE Site. USEPA acknowledged they must stop the discharge of the contaminated groundwater to prevent sediment re-contamination. For the short-term solution USEPA must immediately take action to stop the discharge of the high levels of TCE and PCBs into the surface water in the. Pumping of groundwater from the Spring Lake wells to lower the groundwater to below the streambed of the Bound Brook should be implemented to attempt to minimize the existing chemical discharge. Especially since the Bound Brook EPA report states, 'that the groundwater can continue for decades possibly century's unless something is done to stop it"

Controlling Active Groundwater Discharge:

We also learned that the presence of TCE/PCE in the surface water of the Bound Brook has caused the PCB's to become mobile in the water by attaching to the TCE/PCE molecule, where they would otherwise not be mobile. This caused an active discharge and spread the PCBs downstream and caused the contamination of the 10-miles of the Brook that are under investigation. In order to properly address the groundwater flow into the Brook, the TCE/PCE contaminated groundwater must be controlled and the flow must be cut off so the Bound Brook is not re-contaminated. USEPA must effectively control the groundwater discharge into the Bound Brook for at least 200 years.

One method to stop this discharge is to install a pump and treat system to treat the groundwater so it can be safely discharged back into the Bound Brook. USEPA mentions using a reactive barrier, however they propose to only construct a trench configuration. If USEPA has identified, via its modeling, the key transport fractures, and there are in a fractured system, then why aren't they looking at "targeted reactive barriers," where the zero valent iron is directly injected into those specific key fractures that are most highly contaminated? The remedial options for this site need to have a significant input and 'outside the box' thinking. While it may be true that the 'traditional approaches' may not be effective, that does not mean the contaminated groundwater cannot be managed.

In the review of the options USEPA is considering, the reactive cap on the Bound Brook bottom has the most feasibility, as it would be easiest to operate and maintain for the next 200+ years. However, its construction would need to withstand the erosion forces of a major flood event. Therefore, this project should not leave so many key issues to be determined and addressed in the Remedial Design.

Amendment OU3 ROD:

The USEPA must revisit their decision to leave the groundwater contaminated due to the new information regarding the groundwater plume. Conditions at the site changed and new information from the site was not available when the USEPA decision makers made the decision to leave this huge groundwater plume and issue a determination of impracticability in its cleanup. USEPA and NJDEP did not understand the magnitude and consequences of the discharge of the groundwater. These releases also may be discharging at other areas where the rock conditions permit the release of the site related contaminants of TCE and PCBs. This active discharge of high-level PCBs and TCE from the groundwater and the release of site related contaminants should trigger USEPA's decision makers to reconsider cleaning up OU3 groundwater from the CDE site.

There are several technologies that should be considered to address the CDE Groundwater plume and a treatability study must be conducted to assess these technologies to address the seriously contaminated groundwater plume from the CDE site. Groundwater cleanup is critical now that the USEPA fully understands the extensive threat to human health and the environment. Below is a technology that shows the field application a passive treatment of chlorinated solvents. There are other technologies that are available that USEPA has not considered that must be revisited if they are serious about cleaning up the Bound Brook. The CDE OU3 and OU4 are hydraulically interconnected and must be addressed together. *Please consider the following technology for a treatability study in the groundwater at CDE site:*

> ***Field application of passive treatment of chlorinated solvents using novel sustained-release oxidant technologies:*** RemOx® SR ISCO Reagent is a solid potassium permanganate sustained-release (SR) oxidant technology that utilizes paraffin wax as biodegradable matrix material for encapsulating permanganate. Paraffin protects the oxidant from instant dissolution and nonproductive reactions, is nontoxic, and facilitates sustained release of the oxidant over long periods of time through the processes of dissolution and diffusion. The oxidants can be formed as cylinders for direct push applications or inserted into holders for emplacement in wells. The material also can be chipped or cubed for hydrofracturing into low permeability media for treating back-diffusion of organic contaminants. This presentation covers the application, monitoring program, and results of the first Canadian field-scale pilot application of the RemOx® SR barrier technology in December 2012. The treatment was focused on back-diffusion of TCE and PCE from an off-site source following removal of contaminated soil and groundwater along a property boundary at a Southern Ontario site situated in a silty-clay environment. *(Walsom, D.G. and P.J. Dugan Remediation Technologies Symposium 2013, 31 slides, 2013)*
>
> *Longer abstract:*
> http://www.esaa-events.com/remtech2013/2013abstracts/Abstracts%2027.pdf
> *Slides:*
> http://www.esaa-events.com/proceedings/remtech/2013/pdf/13-Walsom.pdf

Dredging of New Market Pond

Down stream New Market Pond in Piscataway, NJ has also been dredged several times and the dredge spoils contaminated with high levels of PCBs have been disposed of an unknown locations. The dredge could have been used for residential development. The New Market Pond sediments were found to have PCB concentrations that were five times higher in 1956 than are found now (See Attachment 3 - p.11-12). USEPA must to do some fundamental research on where this PCB toxic dredge went. The USEPA must test the entire park and not just the pond to assess if the park soils pose a risk to the families who frequent the park for fishing derby's and other recreational activities. USEPA must thoroughly investigate where this toxic dredge has been relocated.

USEPA section Chief John Prince stated in a recent phone call that the only known use of this highly contaminated PCB dredge was daily landfill cover by Edison Landfill in Edison, New Jersey. The volumes need to be reviewed and assessed and the USEPA must contact the Middlesex County Mosquito Commission who reportedly dredged the pond. USEPA must revisit this issue and investigate where the large volume of high-level PCB dredge was taken and ascertain if it is a current threat to human health or the environment.

PCB Half-life and Natural Attenuation

USEPA states they estimate the half-life of PCB to be 50 years. The concept of half-life implies that the PCB is degrading, that it is no longer PCB, that it is fundamentally changing (as in the half-life of a compound that will biodegrade, or the half-life of a radio isotope); yet, they explicitly state the PCB is not degrading (See Attachment 3 – p.17). USEPA must explain this discrepancy, as the use of the term half-life can be misleading. The only reason concentrations of sediment PCBs are decreasing is because they are relocating downstream. Use of half-life should be dropped from the USEPA's vocabulary at this site.

Natural attenuation of a contaminant includes degradation of the contaminant, typically biological degradation, and dispersion of the contaminant, via diluting into a large volume. For sediments, covering over by uncontaminated sediments is also considered, as this blanket can reduce the exposure to a contaminant. In the case of PCBs, there is no degradation, so the 'natural attenuation' that USEPA is considering is simply movement of the PCBs downstream where the concentrations will be lower due to dilution. Those diluted sediments are, hopefully covered by a clean blanket, never to be disturbed.

USEPA uses the term 'monitored natural recovery' to describe the covering of the PCB contaminated sediments; yet acknowledge this hasn't been occurring. USEPA states in the Stakeholder Information Package that, "a comparison of current and historical surface sediment data (1997-2011) revealed little change in Arochlor 1254 concentrations over the past 14 years, suggesting limited natural recovery of PCB contamination in Bound Brook" (See Attachment 3 - p.12). USEPA must explain how something that has not been happening should be considered as a component of a remedial measure.

Stream sediment transport is a dynamic process that changes as the flow of the Bound Brook changes. Therefore, leaving any PCB in-place will only result in the future recontamination of the downstream areas when the flow dynamics change. This downstream movement pushes the PCB into New Market Pond, which is characterized as a 'trap' for those sediments. USEPA should not consider Monitored Natural Attenuation (MNA) as a component of any remedial measure for the stream sediments because it is not valid for a contaminant that doesn't degrade.

Time Frames for Cost Assessments

Overall, the most important issue is the timeframe. USEPA must present costs for the entire period that these remedies will be implemented and monitored. Otherwise, they are just picking numbers out of the air. The time frames used for the USEPA's cost assessments are not valid and standard protocol says that USEPA should use a 30-year period for evaluating the present worth cost of the various alternatives. For example, any alternative for OU4 related to controlling the groundwater discharge, which prevents the recurrence of PCB's in the sediments, must be maintained for as long as the groundwater contamination could discharge into the stream. This must correspond with the same period that USEPA used to justify its 'technical impracticability.' If the proper time frames were used, the cost evaluation would **ALWAYS** show it is more cost-effective to take a real protective action **NOW** rather than kick the can down the road for some future generation. It is extremely important to be consistent with remedy selection, especially when selecting remedies that are impacted by other sites Operable Units.

Significant Cultural Resources

Finally, a 1915 map and report show the entire Bound Brook and large areas of the Green Brook and Ambrose Brook are prehistoric Native American sites (See Figure 4). The entire study area has the potential to have prehistoric campsites, scattered artifacts and burial sites as old as 8000 B.C. Great care must be taken when doing any additional intrusive work in the Bound Brook and Green Brook by the USEPA. We shall provide the report on the finding in the Bound Brook and request that special care must be given to minimize disturbance of the Bound Brook and recover any prehistoric artifacts.

We strongly support the full cleanup of the Bound Brook, CDE OU4 and all affiliated sites. Our collective organizations and our many thousands of members fully support the full remediation and restoration of the Bound Brook, Woodbrook Road Superfund Site, Dismal Swamp Conservation Area and any contamination sources impacting surface water or sediments.

Thank you in advance for carefully reviewing these comments and implementing them in the Cornell-Dubilier Superfund Site Proposed Plan for Operable Unit 4, the Bound Brook. If you have any questions, Robert Spiegel will serve as the point of contact and can be reached at 732-321-1300 or rspiegel@edisonwetlands.org.

Respectfully,

Robert Spiegel
Executive Director

Edison Wetlands Association

Jeff Tittel
Director
New Jersey Sierra Club

Emile DeVito, PhD
South Plainfield Resident
Manager of Science and Stewardship
New Jersey Conservation Foundation

Bill Schultz
Raritan Riverkeeper

Distribution:

Senator Robert Menendez, with Separate Cover
Senator Cory Booker, with Separate Cover
Congressman Frank Pallone
USEPA Regional Adminstrator Judith Ench
State Senator Peter Barnes
State Assemblyman Patrick Diegnan

MIDDLESEX GREENWAY COALITION

P.O Box 10432 New Brunswick NJ 08906
Phone: 732-985-7071 Fax: 732:985-3294

E-mail: info@edisongreenways.org
http://www.facebook.com/pages/Middlesex-Greenway/106552932739735

Mark Austin, Project Manager
Environmental Protection Agency
290 Broadway, 19th floor
New York, NY 10007

RE: Cornell Dubilier site South Plainfield OU4

November 2, 2014

Dear Mr. Austin,

I attended the public meeting about the Cornell Dubalier OU-4 site in South Plainfield NJ on October 21, 2014.

I have the following questions or comments:

1. During the presentation, the EPA showed a map of areas that are contaminated with PCBs and will be remediated, by removing the soil or dredging the Bound Brook. However the EPA did not identify landowners by lot and block of the areas that had to be remediated. A list of landowners should be provided.

2. It appears that one of the areas to be remediated is owned by Middlesex County Parks Department. This is the area south west of Spring Lake Park, and along the Cedar Brook, and along the north shore of the Bound Brook by the confluence of the two brooks. (See enclosed map)

    a. Has Middlesex County Parks Department been notified of this contamination, and have they been requested to give comment to the cleanup plan?
    b. If they have not yet been contacted I am requesting the comment period be extended to allow for their comments.
    c. Since this area is contaminated, are there any restrictions on public access/use of the site prior to remediation?

3. It was unclear as to how much soil had to be removed from sites, or how deep the dredging of the Bound Brook will be. How much clearing of trees and vegetation need to be done, and what are the depths of the soil excavation?
    a. A survey/inventory of the flora and fauna should be done prior to the work.

4. The Cedar Brook-Bound Brook corridors were used by Native Americans in the pre-historic era. Artifacts have been found along the brooks. Has the State Geologist been contacted about Native American sites that might be located in the project area? The State Geologist published a list of sites around 1914.

5. There was no discussion of how the natural resources of the project will be restored after the removal work.

This project was discussed at the Middlesex Greenway Coalition (MGC) meeting on October 30, 2014, because the project is in the route of the westward extension of the Middlesex Greenway.

1. The route is shown on the 2003 Middlesex County Open Space and Recreation Plan.
2. In the OU-4 project area is where the Middlesex Greenway will connect with a greenway along the Cedar Brook.
3. To achieve this planning goal of extending the Middlesex Greenway and connection to a Cedar Brook greenway, the MGC would like to see a mulit-use trail be constructed after the project is remediated. This trail could be built along the Bound Brook and Cedar Brook and could connect with Spring Lake Park, Veterans Park, and downtown South Plainfield.
    a. Such a trail would help mitigate the damage done by the soil removal and dredging.
    b. This would be consistent with the EPA's policies on Smart Growth which encourages such trails.
4. On the lands that are cleared and remediated the land should be restored using native plant species.
    a. A management plan for the lands should be funded and created to guide future maintenance of the lands.
    b. The EPA should fund 5 years of maintenance of the lands by a competent natural lands entity following the management plan. This will ensure the survivability of plants and trees. Otherwise invasive non-native species will overrun the lands.

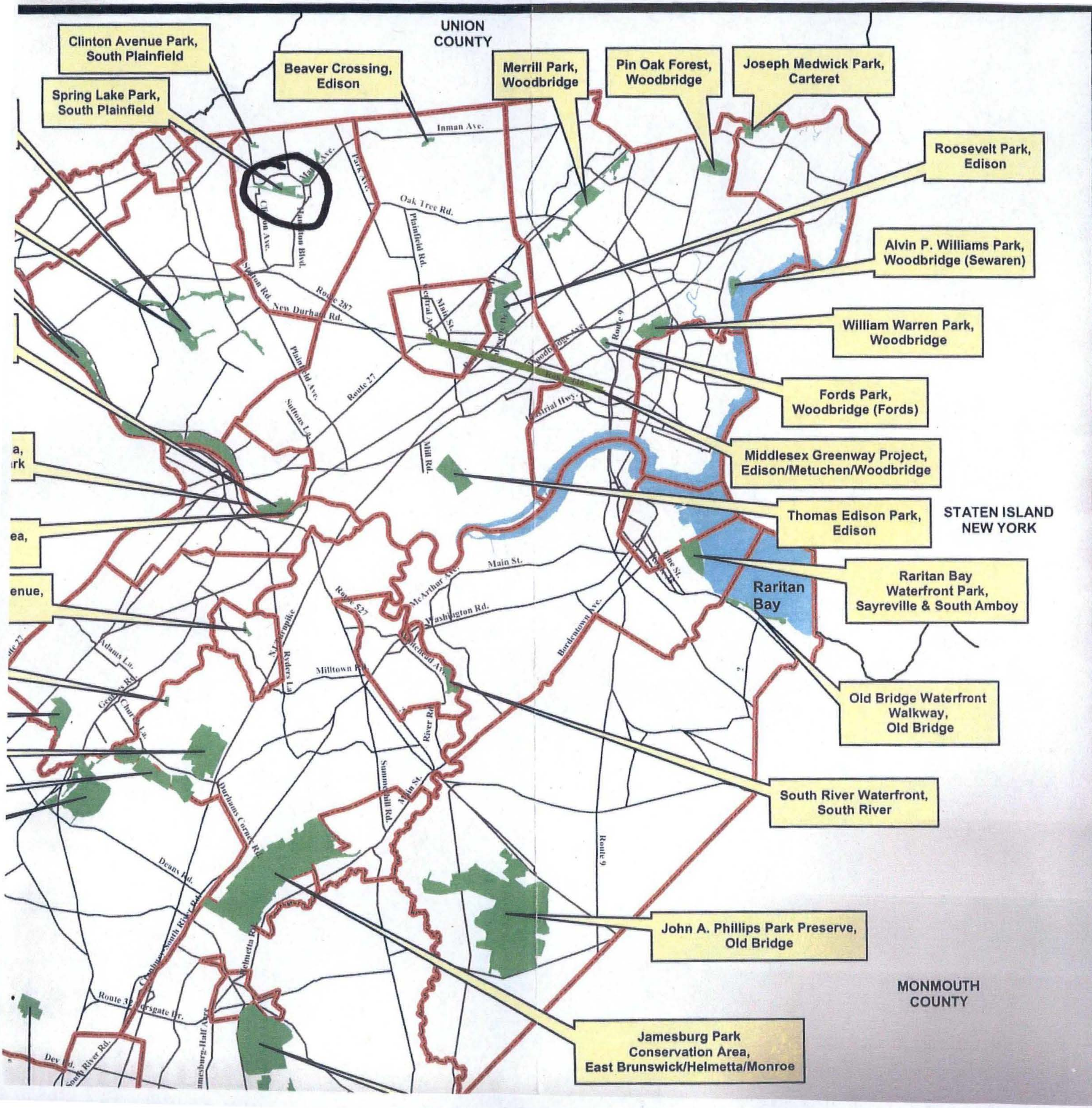
By following our suggestions the remediation of the Cornell Dubilier OU-4 site could result in taking an environmental problem and create a quality asset for the Borough of South Plainfield and Middlesex County.

Thank you,

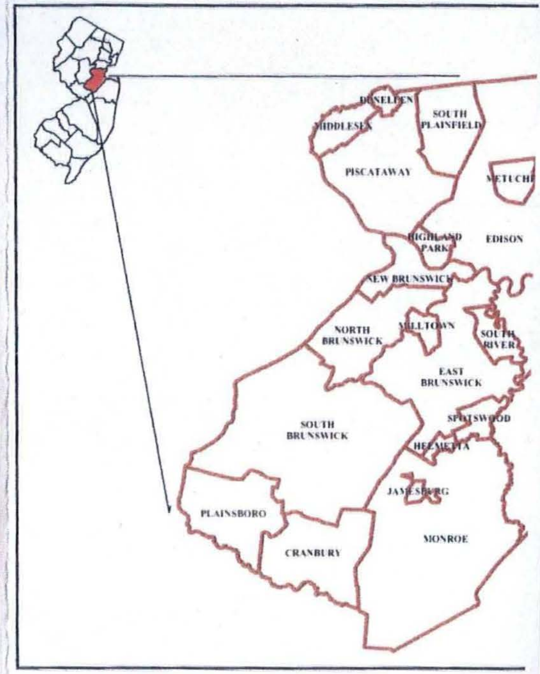
Walter R Stochel

Walter R. Stochel Jr.

CC: R. Takash, Middlesex Greenway
R. Lear, Middlesex County Parks
N. Tufaro, Middlesex County Planning
A. Gambilonghi, Middlesex County Planning
C. Tomaro, Freeholder
P. Diegnan, Assemblyman
P. Barnes, Senator
A. Tempel, South Plainfield
E. DeVito, NJCF



Middlesex County
Open Space and Recreation Plan 2003



Legend

County-Owned Open Spac

Raritan Bay

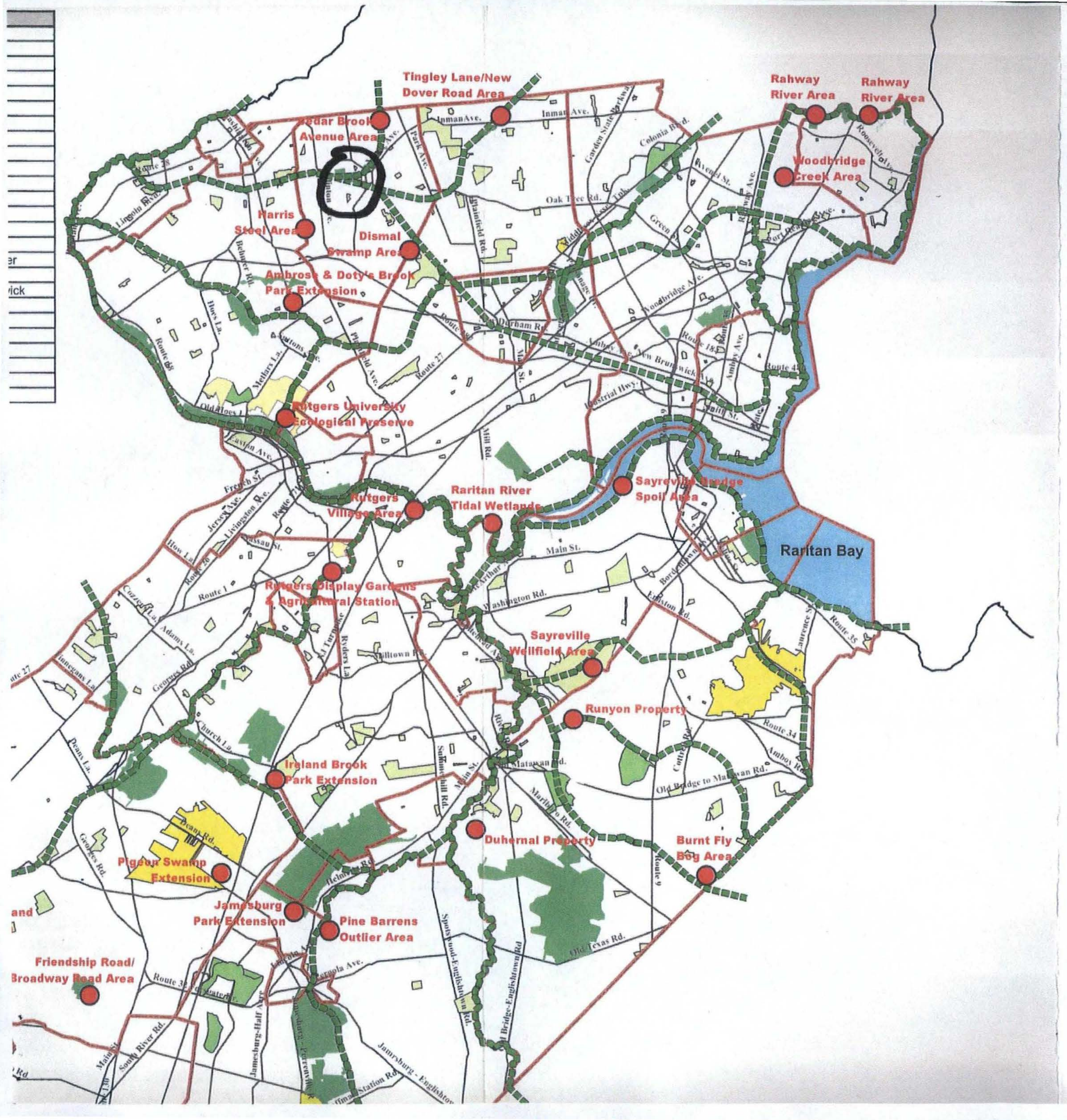
Municipal Boundary

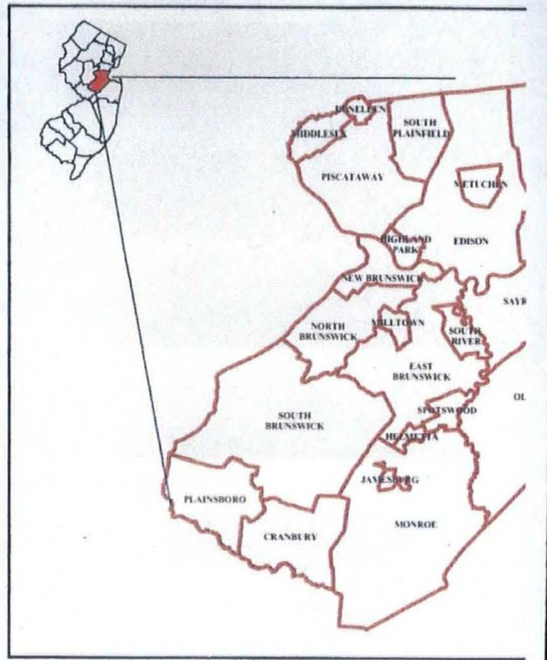
Major Roads

Figure 2

County-Ow

Middlesex County
Open Space and Recreation Plan 2003





Legend

- Quasi-public Open Space
- State Open Space
- County Open Space
- Municipal Open Space
- Private Open Space
- Potential Open Space Acquisition Areas (Refer to Appendix D)
- Conceptual Linkage System
- Potential Connection to Regional Greenway Beyond County Borde
- Raritan Bay
- Municipal Boundary
- Major Roads

Figure 1

Middlesex County Open Space

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Mark Austin
Environmental Protection Agency
290 Broadway 19th Floor
New York, NY 10007

Mr. Walt Stochel
2118 Oak Tree Rd.
Edison, NJ 08820

10007186699

AREA CODE 908

Mayor's Office-226-7601
Clerk-226-7606
Assessing-226-7623
Building Dept.-226-7640
CFO/Administrator-226-7602
Computer Services-226-7649
Emergency Mgmt.-226-7718
Eng./T & M Assoc.-732-671-6400
Environmental-226-7621
Finance-226-7615
Fire Official-756-4761

BOROUGH OF SOUTH PLAINFIELD
2480 Plainfield Avenue
South Plainfield, NJ 07080

AREA CODE 908

Health-226-7630
Library-754-7885
Municipal Court-226-7651
Plan Bd/Bd. of Adj.-226-7641
Police-755-0700
Public Works-755-2187
Recreation-226-7713
Recycling-226-7621
Social Services-226-7625
Tax/Sewer-226-7610
Senior Center-754-1047

November 21, 2014

Mr. Mark Austin
Remedial Project Manager
US Environmental Protection Agency
290 Broadway, 19th Floor
New York, NY 10007

Re: Cornell-Dubilier Superfund Site OU4

Dear Mr. Austin:

I am writing on behalf of the South Plainfield Environmental Commission. Commission members attended the October 21 public meeting where EPA presented its preferred alternatives for the Cornell-Dubilier Superfund Site OU4 remediation.

The Commission believes that Alternative GW-3, to pump and treat groundwater to prevent it from discharging into the Bound Brook, is the most practical of the three proposals. EPA should continue to periodically review the status of groundwater remediation in the Brunswick shale bedrock, as new technologies that would allow actual remediation of the site may become available in the future.

The Commission acknowledges the need to disrupt the existing plant and animal communities in the Brook and along the stream corridor in order to remove contaminated sediment and soil, but regrets their loss. A survey of existing conditions should be made prior to dredging. Restoration plans should include existing native plants where practicable. The Environmental Commission would like the opportunity to review and comment on restoration plans when they are developed.

The Commission has previously provided information about historical and cultural resources in connection with the site. Associate Member Larry Randolph worked with Eugene Boesch, the principal investigator for the Spicer project. In 2012, they walked the stream corridor from the Spicer site to the junction of the Bound Brook with the Green Brook behind Middlesex High School. At that time the Corps was unsure of exactly where they would be digging, so they noted all sites that were present in the floodplain. This included both historic and prehistoric sites. In addition, the area has been surveyed for the Green Brook Flood Control Project and previous work had been done by State Geologist in 1913. Prehistoric sites mostly are located on the terraces adjacent to the floodplain and not on the plain itself. The locations of these sites should be identified before design work begins, so that the plans, including planned access routes into the flood plain, can take them into account and avoid as many as possible.

Thank you for the opportunity to comment on this proposal.

Sincerely,

Dorothy Miele

Dorothy Miele
Chairwoman

Cc: M. Anesh, Mayor
C.J. Diana, Councilman

BOROUGH OF SOUTH PLAINFIELD
2480 Plainfield Avenue
South Plainfield, NJ 07080

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US Environmental Protection Agency
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Ronald G. Rios
Freeholder Director
Carol Barrett Bellante
Deputy Director
Kenneth Armwood
Charles Kenny
H. James Polos
Charles E. Tomaro
Blanquita B. Valenti
Freeholders

Charles E. Tomaro
Chairperson, Infrastructure Management Committee
John A. Pulomena
County Administrator
Richard Lear
Department Head Director

COUNTY OF MIDDLESEX
DEPARTMENT OF INFRASTRUCTURE MANAGEMENT

December 12, 2014

To: Mr. Mark Austin, Remedial Project Manager
US Environmental Protection Agency, Region 2
290 Broadway, 19th Floor
New York, NY 10007

Re: Proposed Remedial Action Plan
Cornell-Dubilier Electronics Superfund Site, South Plainfield, NJ
Operable Unit 4 – Bound Brook
Middlesex County Department of Infrastructure Management Comments on
Preferred Remedial Action to address contaminant migration
impacting the Bound Brook and New Market Pond

Dear Sir,

Our understanding regarding the above-referenced remedial Action Plan is that the preferred measures presented are to address contaminants within the former Cornell Dubilier Electronics site located at 333 Hamilton Boulevard in South Plainfield, New Jersey also known as Hamilton Industry Park. It has been determined that the soil at the site is contaminated with VOCs, semi-volatile organic compounds, metals, and PCBs that contaminant migration from runoff and groundwater is impacting the Bound Brook stream corridor and New Market Pond in South Plainfield.
PCB contamination has been found in in sediments downstream of the site, and fish collected from the Bound Brook as part of an EPA study were found to contain unacceptable levels of PCBs. As a result, NJDEP issued a Fish Advisory and posted signs warning people not to eat fish taken from the brook. An ecological risk assessment conducted by EPA for the Bound Brook corridor near the site determined that the stream ecosystem was at risk from chemical contamination.

EPA in consultation with NJDEP will select a final remedy for each medium identified (contaminated sediments, floodplain soils, and groundwater) after reviewing and considering all information submitted during the public comment period ending on December 15, 2014. EPA, in consultation with NJDEP, may modify the Preferred Alternatives per media or select another response action presented in this Plan based on new information or public comments.

The County of Middlesex has concerns about the Remedial Action Plan because both existing and planned recreation areas are within the study area. Because the water bodies impacted are designated by the State of New Jersey for the maintenance, migration, and propagation of the natural and established biota and the County is invested in open space areas for passive recreation that are consistent with this designation, it is troubling to learn that existing conditions within the study area severely compromise the ability for the lands and waters to perform those functions.

The OU-4 Remedial Action Plan focuses on one of four operable units comprising the study area and diverse contaminant issues with remedial actions for the sediments and floodplain soils of the bound Brook stream corridor.

EPA's preferred remedy includes excavation of floodplain soils and Bound Brook sediments containing polychlorinated biphenyls (PCBs) with off-site transportation and disposal. This action would include the excavation of an area adjacent to the former CDE facility where buried contaminated capacitors are present. EPA's preferred remedy also would address contaminated groundwater that discharges to Bound Brook, through hydraulic containment. Finally, EPA's preferred remedy would relocate a 36-inch waterline that traverses the former CDE facility in order to protect the integrity of the facility remedy and future remedies implemented in Bound Brook.

General Comments – Restoration for Future Open Space Priorities

We appreciate that EPA has developed a site-specific "resident-parklands" land use, identifying conservative and representative land use for exposure to the floodplains of OU4.

The remediation area is within a proposed alignment for a "greenway" linkage between the Green Brook and Spring Lake County Park (Green linkage NW-3MC Open space and Recreation Plan, 2003) that will utilize the Bound Brook corridor. Additionally, the County is in negotiating for/or already is in possession of several existing parcels in the vicinity of the eastern limits of the study area to eventually accomplish a westward expansion of the Middlesex Greenway. County open space plans would result in more active use of the corridor for increased recreational use.

We would appreciate an evaluation of the potential impact of the preferred remedial actions on continued plans for such recreational uses, specifically:

<u>Green Acres Program Requirements:</u>

If any restoration activities are conducted on County Parkland, it should be in accordance with Green Acres regulations, particularly the removal of vegetation and soils.

<u>Public Access:</u>

We would request an evaluation of included increased public access along the Bound Brook with the restoration area.

<u>Monitoring and Documentation of Vegetative Restoration Areas Disturbed by Remedial Actions</u>:

We recommend the length of monitoring for confirmed establishment of the restoration vegetation to be between 5 to 10 years, understanding that replanting may be required to achieve the minimum accepted levels of survival and area coverage. In that time, recovery should be measured and documented bi-annually. We would require documentation that the restoration sites have an 85 percent survival and 85 percent area coverage of the restoration plantings or target hydrophytes which are species native to the area and similar to ones identified on the restoration planting plan to be developed for the project. The restoration plan should also include the ability to provide additional plantings should the sites fail to meet the indices for success. Monitoring must document that all plant species are healthy and thriving and, if the proposed plant community contains trees, demonstrate that the trees are at least five feet in height. Likewise, the sites should exhibit substantial species diversity.

We would also require monitoring, action and documentation to minimize the establishment of invasive species to determine that the site is less than 10% occupied by invasive or noxious species as identified the New Jersey Invasive Species Council.

We are concerned that the measures proposed, which rely on Monitored Natural Recovery (MNR) for contamination reductions, conservatively would reduce contamination in fish tissue to a protective level after 100 years. While expressed as a "reasonable timeframe" in EPA documents, this seems to be an overly long time for sustained monitoring to determine exactly when fish advisories can be lifted for the watercourse.

In the interest of making the strongest effort to preserve these areas for recreational use and a healthy habitat for native biota, we would support modifications of the remediation measures that would include accelerated reduction of contaminants to achieve protective levels in fish tissue to allow sustenance fishing in a much shorter timeframe than the 100 years implied.

Sediments and Floodplain Soils – Support of SS-2 as preferred alternative

Because SS-2 action represents the most comprehensive remediation by full removal of actual contaminants with the minimum reliance on MNR we are in agreement that it appears to be the best course of action. We agree that cap alternatives are not appropriate as they are too restrictive in light of future uses and anticipated flood control measures and potential stream modification work in the Bound Brook as part of the Green Brook Flood Control Commission activities.

We are concerned that the restoration of excavated and disturbed areas of the Bound Brook corridor be performed with measures and materials that most reflect the desired natural conditions of an uncontaminated stream. We strongly encourage that restoration in low lying, floodplain and overbank areas and within the stream channel utilize clean soils that can support the native species that are to be planted and humans and animal species that will utilize the open space areas. Clarification of the restoration of excavated areas related to establishment of native plants is appreciated.

We strongly recommend careful adherence to use of natives and ecologically appropriate plant species, especially the use of local genotypes as an integral component of the restoration activities. Wherever possible, the county would appreciate stable vegetated banks over riprap armoring techniques. Where it is appropriate to withstand erosive flows, we would encourage "green infrastructure" armoring that would combine engineered stabilization with appropriate bank plantings.

The option to excavate stream bed soils by first dewatering segments to be excavated is preferred by the County, as alternative dredging is most likely to present risks of more migration of contaminants to downstream areas.

Groundwater – Support of GW-3: Hydraulic control of Groundwater

It is important to note that the EPA has invoked a waiver for restoration of the groundwater due to technical impracticability. The selected remedy for groundwater relies primarily on institutional controls and long-term groundwater monitoring to prevent use of untreated groundwater as a source of drinking water and hydraulic containment of the groundwater to prevent movement into the Bound Brook.

The commitment to regular upkeep of the hydraulic containment system of wells for groundwater extraction and a water treatment facility cannot be underestimated, as this operational measure may be necessary for many decades or even centuries, i.e., as long as contaminants within the bedrock matrix would prevent groundwater from meeting remedial action objectives in Bound Brook.

Capacitor Debris – Support of CD-4: Full Depth Excavation and Off-Site Disposal

Because the CD-4 action represents the most comprehensive remediation by full removal of actual contaminants with the minimum reliance on MNR we are in agreement that it appears to be the best course of action.

The Middlesex County Department of Infrastructure Management, Office of Planning and Office of Parks and Recreation appreciate this opportunity for input on this important proposal to resolve a Superfund site within our County. As remedial action moves forward we will be pleased to comment on the details of the porposed actions.

Sincerely,

Richard M. Lear

Richard Lear, Department Head

cc: Freeholder Charles E. Tomaro
George Ververides, Director of Planning
Nick Tufaro, Principal Planner, Middlesex County
Eric Gehring, Open Space Coordinator, Office of Parks and Recreation

Brian Weeks
33 Beechwood Avenue
Metuchen, N.J. 08840
weeks5@optonline.net
732-906-6573

U.S. Environmental Protection Agency
Region 2
Attention: Mark Austin
290 Broadway, 19th floor
New York, N.Y. 10007-1866

October 28, 2014

Dear Mr. Austin,
I write to comment on the cleanup of the Cornell Dubilier Electronics (CDE) Superfund site in South Plainfield, N.J. I read the EPA's Sept. 2014 Proposed Plan and its preferred remedial alternative, and attended your public hearing in South Plainfield on October 12.

I first want to thank you for continuing to take action to clean up this site, which has been polluting the environment and risking public health for too long. I support your choices for the Operable Unit 4 remediation, including pumping and treating the contaminated groundwater to prevent its re-contaminating the sediments of the Bound Brook , and dredging or excavating the contaminated sediments that are already there. I am particularly glad that you will remove the worst contamination for the full length of the Bound Brook downstream from the site.

I also am glad that you will control the flow of contaminated groundwater toward the Park Avenue wells of the Middlesex Water Company. Middlesex Water Company provides water to Metuchen, where my family and I live. I have no reason to doubt that the water company is doing a decent job treating the water as required by potable water regulations. But I also have no doubt that the resulting water will be cleaner, and the treatment process may be a bit less expensive, if contaminated groundwater does not reach the wells in the first place. I do not like the idea that our potable water treatment system is the first line of defense against polluted groundwater.

The eastern fork of the Bound Brook starts here in Metuchen, about three miles upstream of the CDE site. My family and friends and I enjoy the outdoor activities that we can access without having to drive. The Middlesex Greenway rail trail has been a great amenity for area residents to enjoy. We are excited that Middlesex County may extend the Middlesex Greenway to the Dismal Swamp. Meanwhile, the County has been investigating the purchase of 12+ acres in the southeast corner of the Dismal Swamp (which is the northwest corner of Metuchen). Together, they will create a publicly accessible trail and wooded wetlands area that will make a great park. The timing is great as well, since that area of the borough is undergoing redevelopment.

I suggest that the EPA coordinate with Middlesex County, the N.J. Department of Environmental Protection and the U.S. Army Corps of Engineers to clean and restore the entire length of the Bound Brook, including the eight miles downstream of the CDE site and the three or so miles upstream. I realize that each agency has its particular focus, be it cleaning up a certain site, reducing flooding or restoring the stream and wetlands after remediating each site. But it would be a pity if a fragmented approach due to differing agency priorities should miss out on a tremendous opportunity to reverse over 100 years of abuse of the Bound Brook and Dismal Swamp.

I am sure that collectively the agencies can find synergies in their respective areas of expertise to make the most of this opportunity. For example, the EPA proposes excavating soil with high levels of PCBs and buried capacitors. Perhaps some of these excavated areas could be left, at a lower elevation and not filled back in, in order to increase the capacity of the Bound Brook corridor to hold storm water and to re-create wetlands. The groundwater that EPA pumps up from the site and treats should be discharged back into the Bound Brook. Clean water is a valuable resource, especially when we have a long dry spell and the water level in the Bound Brook drops very low. It would be nice if the water could be discharged as far upstream of the CDE site as possible, where it may be useful in helping to restore wetlands on the Woodbrook Road dump site and beyond. No reason to waste the treated water and spend the money to discharge it to already overloaded public sewage treatment works.

I also suggest that the EPA and its fellow agencies take steps to restore fish passage up the Bound Brook. Like many rivers and streams, before the mill dams completely blocked the width of the Bound Brook, fish would have been able to swim up into the Dismal Swamp and elsewhere along the Brook to spawn. Those mills are long gone. I suggest either breaching the dams or adding fish passage structures to facilitate the return of fish to the entire Bound Brook. If the sediments and water have been cleaned up, why not? And while you're at it, how about seeing if it's possible to arrange passage along the entire Bound Brook for kayaks and canoes, with portage points at any dams that remain?

Anyway, these are my suggestions that I think would make your very good cleanup proposal into a truly transformative restoration. Please let me know if you would like to kayak down the Bound Brook at some point and see how much fun it is. Keep up the good work!

Very truly yours,

Brian Weeks

Brian Weeks

hwood Ave.
N en, N.J. 08840

DV DANIELS NJ 070
29 OCT 2014 PM 9 L

U.S. E.P.A
Region 2
Attn.: Mark Austin
290 Broadway, 19th floor
New York, N.Y. 10007-1866

10007230699

Mr. Mark Austin, RPM
U.S. EPA Region 2
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund Site
Operable Unit 4 - Bound Brook Study
South Plainfield, New Jersey

Dear National Remedy Review Board,
February 27th, 2014

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Please remove all PCBs, stop the discharge of groundwater, and fully restore this water body so it is no longer a threat to our community and provides a safe and clean habitat for us and the wildlife. I look forward to your complete clean up and restoration in the near futures so I can once again recreate along this beautiful brook.

NICOLENA CARLUCCI

Respectfully,

[signature]

Address:
228 Kosciusko Ave
South Plainfield 07080

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U.S. EPA Region 2
290 Broadway, 19th Floor
New York, New York 10007-1866

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Respectfully,

Address: 320 Joan St.
S. Plainfield NJ 07080

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Address: 174 TEN EYCK ST
SO PLAINFIELD 07080

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Respectfully, Elaine M Beraldin

261 St James Pl.
Address: So Plfld NJ 07080

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Respectfully,

Alton Ingram

Address: 119 Pine Street
South Plainfield NJ 0708

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Respectfully,
David Henne

Address: 141 Pine St S. Plfd NJ 07080

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Respectfully,
Joan Dudas
Joan Dudas 146 Grove St, South Plainfield NJ 07080
Address:

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U.S. EPA Region 2
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Respectfully,

JOSE BASANTES

Address: 113 GROVE ST

SO. PLAINFIELD NJ 07080.

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Respectfully,
Samuel Feldman

Address: 135 Grove Ave South Plainfield NJ

Samuel Feldman

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Address:
322 HANCOCK ST
SOUTH PLAINFIELD NJ.

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Bakhi Durham

Address: 430 Hancock St

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Respectfully,

Dustin Sealy

Address:
423 Delmore Ave

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Address:
900 Lorraine Ave
So. Plfd NJ 07080

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Jiliene SEVILLA

Address: 806 LORAINE AVE
SO PLAINFIELD NJ

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290 Broadway, 19th Floor
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07080

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Robyn Stewart

Address: 210 Delmore Ave
So Plfd, 07080

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115 Delmore Ave R. NARAMADAN

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Lori Iavarone

Address: Lori Iavarone
4116 Arlington Ave
So. Plfd. NJ 07080

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USEPA must properly asses and clean New Market Pond and address the consumption of contaminated fish. USEPA must work with the health agencies on better education for low income population who consume the poisoned fish in the pond. USEPA must also explain why the fish in the Spring Lake Park are PCB contaminated.

The Dismal Swamp Conservation Area is the largest contiguous wetlands in Northern Middlesex County and a regionally important ecological resource (NJdismalswamp.org), where my family recreates. I would like to see a full restoration of the Bound Brook in this sensitive area. We would enjoy an access point for small boats of kayaks once it is restored.

Please remove all PCBs, stop the discharge of groundwater, and fully restore this water body so it is no longer a threat to our community and provides a safe and clean habitat for us and the wildlife. I look forward to your complete clean up and restoration in the near futures so I can once again recreate along this beautiful brook.

Respectfully,

Jeannine DeAndrea Jeannine DeAndrea

Address:
419 Arlington Ave.

Mr. Mark Austin, RPM
U.S. EPA Region 2
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund Site
Operable Unit 4 - Bound Brook Study
South Plainfield, New Jersey

Dear National Remedy Review Board,
February 27th, 2014

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LAUGATESADA

Address: 320 SPICER AVE
SO. PLAINFIELD, NJ 07080

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Thank you,

Address: 1015 MAPLE AVE, SO PLFD, NJ 07080

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Pottan Jain

Address: 115 FAULKES PLACE
SO. PLAINFIELD
NJ
07080

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U.S. EPA Region 2
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New York, New York 10007-1866

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Thank you,

Carole Kapinos

Address: 712 - MAPLE AVE
SO. PLAINFIELD, NJ.
07080

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Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
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Thank you,

— Robert GRAF

Address:

1012 Maple Ave
So PLFD NJ
07080

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Thank you,

Karen Ursiello

Address:
317 Joan St
South Plainfield, NJ 07080

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U.S. EPA Region 2
290 Broadway 19th Floor
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Thank you,
Michael Partnoy

Address:
313 JOAN ST
So PLFD, NJ 07080-4507

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Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Thank you,

C. Sun [signature]

Address: 309 JOAN ST
SOUTH PLAINFIELD
NJ 07080

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Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Thank you,

[illegible]

Address: 221 Joan Street
South Plainfield NJ 07080

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910 [illegible] AVE
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119 Ten Eyck St.

Address: So. PLFD N.J.

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U.S. EPA Region 2
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Thank you, James Ek[illegible] JAMES PEKAR

409 Pierce St S.Pl[illegible]. NJ 07080

Address:

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Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
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At New Market Pond in Piscataway, USEPA needs to take a more proactive approach to address the uncontrolled fishing that is ongoing. Also, consult the health agencies on implementing a better education program for low income and non-English speaking people who consume the poisoned fish in the pond. The USEPA must also explain why the fish in the Spring Lake Park are contaminated with PCBs when the water from the Spring Lake only flows into the Bound Brook.

USEPA must work with the United States Fish and Wildlife Service, New Jersey Department of Environmental Protection and United States Army Corps of Engineers on the clean-up and restoration in the Bound Brook. They need to strongly consider comments and issues raised by our neighbors at Edison Wetlands Association and the public.

Please remove all PCBs, stop the discharge of groundwater, and fully restore this water body so it is no longer a threat to our community, and provides a safe and clean habitat for us and the wildlife. As members of this community, we want to know that we, our children, and future generations have a safe home without health risks and hazards caused by PCBs and other contaminants on our land, in our drinking water, and in our air.

Thank you,

Angelo Marino

Address:
137. Grove St. So, Plainfield NJ.

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

February 27, 2014
Dear National Remedy Review Board,

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Thank you,

Eug Kosi EUGENE KOSINSKI
Address:
135 GROVE ST.
SO. PLAINFIELD, NJ.

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

February 27, 2014

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Address:

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U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Thank you,

Christopher Cioffi
Address: 505 Maple Ave
So Plainfield, NJ 07080

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

February 27, 2014

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Thank you,

Peter Zerondello

Address:
422 BERGEN ST
SO PLAINFIELD N.J.

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

February 27, 2014
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Thank you, John Healy John Healy
319 Delmore Ave.

Address: South Plainfield
07080

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

February 27, 2014
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Thank you,

Address: 210 Spicer Ave So PLFP 07080

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund site
Operable Unit 4 - Bound Brook Study

Dear National Remedy Review Board,
2/26/14

As a member of this community, and as a parent, who lives adjacent to the Bound Brook, I strongly suggest the complete removal of all polychlorinated biphenyls (PCBs) for the cleanup of the Bound Brook as part of Operable Unit Four of the Cornell Dubilier Electronics Superfund Site. I strongly request the United States Environmental Protection Agency (USEPA) to remove all PCB contamination and stop the discharge of groundwater that is actively entering the Bound Brook at the surface.

The Bound Brook flows through the 1,250 acre Dismal Swamp Conservation Area (DSCA) and it is the home to over 175 bird species, 25 mammal species, and 25 species of reptiles and amphibians located in Edison, South Plainfield, and Metuchen. My children often run and play with their friends on the trails at Triple C Ranch, located in the DSCA. As they are having fun, they can be exposed to the PCB contaminated soil and water. I am extremely worried for the level of PCB exposure they may have encountered and any health effects that may occur in my children if this remains.

Additionally, my community and visitors use the DSCA for recreational purposes, such as fishing, swimming, hiking, hunting, bird watching, biking, and educational learning. Please know that people of all ages use this beautiful land, and the community and I want this area to be protected and cleaned of hazardous substances like PCBs. The contamination has spread to Spring Lake Park, as the fish from there have also been found to be contaminated with PCBs. It is a very uneasy feeling knowing your children do not know the dangers of doing something as harmless as swimming in the Bound Brook or Spring Lake Park and may be exposed to PCBs.

As a parent of this community, I strongly suggest that you consider the issues raised by Edison Wetlands Association (EWA), as they have worked for 25 years to help preserve the DSCA and clean up the Bound Brook so that it is safe for the community, the biota and the inhabiting birds. It would be beneficial for the USEPA to work with the US Fish and Wildlife Service, New Jersey Department of Environmental Protection and any other agencies to remove all PCBs, stop the discharge of groundwater, and fully restore this water body so it is no longer a threat to our community and provides a safe and clean habitat for us and the wildlife. As members of this community, we want to know that we, our children, and future generations have a safe home without health risks and hazards caused by PCBs and other contaminants on our land, in our drinking water, and in our air.

Sincerely,
Sally Bahn
____
Address:

228 Spicer Ave

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund site
Operable Unit 4 - Bound Brook Study

Dear National Remedy Review Board,
2/26/14

As a member of this community, and as a parent, who lives adjacent to the Bound Brook, I strongly suggest the complete removal of all polychlorinated biphenyls (PCBs) for the cleanup of the Bound Brook as part of Operable Unit Four of the Cornell Dubilier Electronics Superfund Site. I strongly request the United States Environmental Protection Agency (USEPA) to remove all PCB contamination and stop the discharge of groundwater that is actively entering the Bound Brook at the surface.

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Sincerely,

[signature]

Address: 207 Harvard Ave
So. Plainfield, NJ, 07080

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
2/27/14
National Remedy Review Board,

As a member of this community who lives adjacent to the Bound Brook, I strongly suggest the complete removal of all polychlorinated biphenyls (PCBs) for the cleanup of the Bound Brook as part of Operable Unit 4 of the Cornell Dubilier Electronics Superfund Site, South Plainfield, NJ.

The Bound Brook headwaters flow from the 1,250 acre Dismal Swamp Conservation Area (DSCA) located in Edison, South Plainfield, and Metuchen. I often walk my dog on the trails in the DSCA. I do not feel comfortable to walk my dog around my neighborhood because of the possible exposure to toxic vapors. I must also make sure he is cleaned off as soon as we get home so he does not bring any PCBs into my house. These are the types of thoughts I have everyday as I worry about all the harmful contaminants within Bound Brook.

The USEPA does not know if they now have a problem similar to the vapor intrusion problem in Pompton Lakes, NJ. At that site, the DuPont Chemical Company had caused a similar situation and over 450 homes had toxic poisonous gases entering into the basements of the homes. The families were forced to breathe poison gas for decades before EPA disclosed the severity of the problem. We must know if we are being exposed to TCE and PCE through vapor intrusion.

New Market Pond has also been dredged several times over the last 100 years with the dredge spoils stockpiled used by developers for residential development. The USEPA needs to do some fundamental research on where this PCB toxic dredge went and test those areas as well as the entire park not just the pond for PCB and chemicals.

Spring Lake and Spring Lake Park are located in the town of South Plainfield, NJ. This is a bucolic lake and is also an area that is used as a drinking water resource. The drinking water wells at Spring Lake were shut down due to the finding of site related contaminants from the CDE Site. When the Middlesex Water Company shut the wells down at Spring Lake, water levels in the groundwater rose from several hundred feet down to the surface and now discharges into the Bound Brook as well as other potential areas which have not yet been determined.

Regards, [illegible]

Address: 147 [illegible]
[illegible] 07080

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
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Regards,

Address: 112 Joan Street

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Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
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Regards,
Geraldine Rosales
Address:
1208 Maple Ave. So. Plain Field. NJ. 07080

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
2/27/14
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Address:

1311 Maple

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
2/27/14
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Regards,
Alyssa Adamson Alyssa Adamson
Address:
401 Cotton St.

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
2/27/14
National Remedy Review Board,

As a member of this community who lives adjacent to the Bound Brook, I strongly suggest the complete removal of all polychlorinated biphenyls (PCBs) for the cleanup of the Bound Brook as part of Operable Unit 4 of the Cornell Dubilier Electronics Superfund Site, South Plainfield, NJ.

The Bound Brook headwaters flow from the 1,250 acre Dismal Swamp Conservation Area (DSCA) located in Edison, South Plainfield, and Metuchen. I often walk my dog on the trails in the DSCA. I do not feel comfortable to walk my dog around my neighborhood because of the possible exposure to toxic vapors. I must also make sure he is cleaned off as soon as we get home so he does not bring any PCBs into my house. These are the types of thoughts I have everyday as I worry about all the harmful contaminants within Bound Brook.

The USEPA does not know if they now have a problem similar to the vapor intrusion problem in Pompton Lakes, NJ. At that site, the DuPont Chemical Company had caused a similar situation and over 450 homes had toxic poisonous gases entering into the basements of the homes. The families were forced to breathe poison gas for decades before EPA disclosed the severity of the problem. We must know if we are being exposed to TCE and PCE through vapor intrusion.

New Market Pond has also been dredged several times over the last 100 years with the dredge spoils stockpiled used by developers for residential development. The USEPA needs to do some fundamental research on where this PCB toxic dredge went and test those areas as well as the entire park not just the pond for PCB and chemicals.

Spring Lake and Spring Lake Park are located in the town of South Plainfield, NJ. This is a bucolic lake and is also an area that is used as a drinking water resource. The drinking water wells at Spring Lake were shut down due to the finding of site related contaminants from the CDE Site. When the Middlesex Water Company shut the wells down at Spring Lake, water levels in the groundwater rose from several hundred feet down to the surface and now discharges into the Bound Brook as well as other potential areas which have not yet been determined.

Regards,

Address: ROBERT OBSESTER
1112 PIERCE ST
SO. PLAINFIELD NJ
07080

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
2/27/14
National Remedy Review Board,

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Louis Ronzo LOUIS RONZO
Address:

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Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
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Regards, John Shore Jr
JOHN SHORE JR
Address: 230 Arlington Ave
South Plainfield 07080

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866
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Regards,
Jeffrey Tutolman

Jeffrey Tutolman

Address
217 Kosciusko Ave
S Plainfield, NJ 07080

Mark Austin
Remedial Project Manager
United States Environmental Protection Agency Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund site

Dear National Remedy Review Board, 2/26/14

Please remove all PCBs, stop the discharge of groundwater, and fully restore this water body so it is no longer a threat to our community and provides a safe and clean habitat for ourselves as well as the wildlife.

I very much enjoy the sport of hunting, but these animals are being exposed to dangerous levels of PCBs in the soil and water of the Bound Brook. I have to be mindful of the possible PCB contamination in their tissues in order to prevent any exposure to myself. Also, a PCB-contaminated site could cause the moving away or dying off of these animals, so I would no longer be able to enjoy hunting in this location.

USEPA needs to reopen the groundwater cleanup decision and come up with a way to treat the groundwater at the site and also capture it from entering the Bound Brook. A common sense and expedient way the USEPA can do this in a timely fashion is to simply start pumping the drinking water wells at Spring Lakes. USEPA can treat groundwater and discharge the clean water into Spring Lake or The Bound Brook instead of having it uncontrolled for many decades to come. USEPA must also quantify the impact of the PCBs and other chemicals within New Market Pond and around the entire park.

Please consider this letter seriously as you make future decisions regarding the Cornell Dubilier Electronics Superfund site. Many life forms are feeling the effects of a contaminated habitat, and your recognition of these problems would be greatly appreciated.

Sincerely,

Patrick Kelly

Address:
227 HARVARD AVE
So. PLFD NJ
07080

To: Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund site
Operable Unit 4 - Bound Brook Study

Dear National Remedy Review Board,
February 26 2014,

As a mother, I strongly request the United States Environmental Protection Agency (USEPA) to remove all PCB contamination and stop the discharge of groundwater that is actively entering the Bound Brook at the surface.

The Bound Brook flows through the Dismal Swamp Conservation Area (DSCA) and is home to over 175 bird species, 25 mammal species, and 25 species of reptiles and amphibians. This diverse habitat and many opportunities was the reason I picked this area to reside in and start a family, so my children could experience nature and the outdoors. Then, all of the sudden, I learned about PCB contamination in the soil and water, resulting in me having to consider the safety of my children as they continue to develop and grow up in this community.

The USEPA needs to reopen their decision to simply monitor the toxic groundwater and actively clean it up. The toxic groundwater plume extends over 600 acres in size. The decision to monitor the groundwater at this site was done before the USEPA understood that the groundwater conditions had changed after the pumping of the contaminated drinking water wells by Middlesex Water Company was halted, and the groundwater rose to the surface.

With regard to New Market Pond in Piscataway, New Jersey the US EPA also needs to take a more proactive approach at New Market Pond and address the uncontrolled fishing that is going on. The issues pertaining to drinking water wells in Spring Lake must also be recognized.

The Dismal Swamp Conservation Area or DSCA is the largest contiguous wetlands in Northern Middlesex County and a regionally important ecological resource. The USEPA must now take a more regional approach to cleaning up the entire bound Brook including the up gradient areas that are the headwaters and its tributaries. USEPA's investigation of the surface water in the upgradient areas in the DSCA and its tributaries show that there are ongoing discharges of chemicals still occurring that are impacting surface water and sediment in the Bound Brook. Finally, the USEPA must work with the U.S. Fish and Wildlife Service, NJ Department of Environmental Protection, and other agencies on the clean-up and restoration of the Bound Brook and DSCA.

As members of this community, we want confidence that we, our children, and future generations will have a safe home without health risks and hazards caused by PCBs and other contaminants on our land, in our drinking water, and in our air.

Respectfully,
S. VanZeen

Address:

To: Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Respectfully,

[illegible]

Address: 403 [illegible] St

To: Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Address:

415 Bergen

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U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Address:
421 Pulaski St.

To: Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Respectfully,

114 HARVARD Ave - South Plainfield NJ 07080
Address:

Gayle Butrico

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund site
Operable Unit 4 - Bound Brook Study

February 27, 2014
Dear National Remedy Review Board,

The public overwhelmingly supports the comprehensive cleaning and restoration of the Bound Brook, its tributaries and headwaters including areas in Metuchen, Edison, South Plainfield, Piscataway, and all towns that are in the Bound Brook watershed.

As a hiker, I often use the trails at Triple C Ranch, which is located in the heart of the Dismal Swamp. I enjoy my morning runs along the Bound Brook, experiencing the wildlife. But during heavy rainfall and flood events, I avoid hiking and jogging along the Bound Book in fear of being harmed by the PCB-contaminated water. People of all ages use this beautiful land, and the community and I want this area to be protected and cleaned of hazardous substances like PCBs.

The USEPA does not seem to understand the geology or hydro-geology of this area. They have walked away from the groundwater cleanup and need to start immediately treating the chemicals. The groundwater now discharges into the Bound Brook because of USEPA's inability to clean the site in a timely manner.

With regard to New Market Pond in Piscataway, the USEPA needs to take a more proactive approach at New Market Pond and address the uncontrolled fishing that is going on as well as work with the health agencies on better education for low income people who consume the poisoned fish in the pond. The USEPA must explain why the fish in the Spring Lake Park are contaminated with PCBs when the water from the Spring Lake flows only into the Bound Brook.

The USEPA made a decision that they would include the cleanup of the Bound Brook from a second upstream Superfund Site. The site is called the Woodbrook Road Superfund site and it is located in the Dismal Swamp. The Dismal Swamp is the largest contiguous wetlands in Northern Middlesex County and a regionally important ecological resource. The USEPA must work with the US Fish and Wildlife Service, State Department of Environmental Protection, and other agencies on the clean up and restoration in the Bound Brook and Dismal Swamp Conservation Are, and remove all the PCBs and other chemicals so I can use this area safely again.

Best, Nelly Soto

Address:
342 PULASKI ST

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Best,

Barbara L Schaefer

Address:

420 Pitt Street
So Plainfield, N J. 07080

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Best, Thomas Brandt - THOMAS BRANDT

Address: 119 DELMORE AVE - SO. PLFD. N.J.

Mr. Mark Austin
Remedial Project Manager
U.S. EPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Best,

Address: Jennifer Gallegos
223 Kosciusko Ave.
South Plainfield, NJ 07080

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

National Remedy Review Board,
2/27/14

As a fisherman, I am deeply concerned about polychlorinated biphenyls (PCBs) present in the Bound Brook as a result of the Cornell Dubilier Electronics Superfund Site. I would like to make a request that the United States Environmental Protection Agency (USEPA) remove all PCB contamination and stop the discharge of groundwater that is actively entering the Bound Brook at the surface.

I frequently fish in the New Market Pond, which has water from the Bound Brook. These fish are now exposed to dangerous levels of PCBs in the contaminated soil and water in the Bound Brook. The PCB contamination in fish tissue reached a level that required the New Jersey Department of Environmental Protection (NJDEP) to issue a fish advisory stating not to eat any of the fish species from the Bound Brook and the New Market Pond. I would previously eat the striped bass and eels I caught, but now I cannot enjoy the full experience of being a fisherman without endangering my own health.

With regard to New Market Pond in Piscataway, New Jersey, the USEPA needs to take a more proactive approach at New Market Pond and address the uncontrolled fishing that is going on. The USEPA also needs to explain why the fish in the Spring Lake Park are contaminated with PCB's when the water from the Spring Lake flows into the Bound Brook only.

The USEPA made a decision that they would include the cleanup of the Bound Brook from a second upstream Superfund site. The site is called the Woodbrook Road Superfund site and it is located in the Dismal Swamp Conservation Area. The USEPA must work with the US Fish and Wildlife Service, NJ Department of Environmental Protection and other agencies on the clean up and restoration in the Bound Brook and Dismal Swamp Conservation Area. They need to strongly consider comments and issues raised by the Edison Wetlands Association (EWA) and the public.

The Dismal Swamp Conservation Area and the Bound Brook's headwaters has been a subject of a policy change over the last several years with an overwhelming number of elected officials, regulators, and the public wanting the area cleaned, preserved, and restored. The USEPA must adhere to this policy, changing and cleaning water and sediments in the Bound Brook. The water and sediment must be cleaned to the highest possible level and the Bound Brook must be drinkable, swimmable, and fishable when the USEPA completes this work.

Regards,

Address:
216 Bergen st.
So. plainfield NJ. 07080

To: Mr. Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

National Remedy Review Board,
2/27/14

As a fisherman, I am deeply concerned about polychlorinated biphenyls (PCBs) present in the Bound Brook as a result of the Cornell Dubilier Electronics Superfund Site. I would like to make a request that the United States Environmental Protection Agency (USEPA) remove all PCB contamination and stop the discharge of groundwater that is actively entering the Bound Brook at the surface.

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Regards,

CHRISTOPHER PAPIANNI

Address:

CPapianni

224 Kosciusko AV
S. PLFD 07080

Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

Re: Cornell Dubilier Electronics Superfund site
Operable Unit 4 - Bound Brook Study

Dear National Remedy Review Board, February 27th, 2014

As an avid bird watcher and member of the community who lives adjacent to the Bound Brook, I strongly suggest the complete removal of all polychlorinated biphenyls (PCBs) for the cleanup of the Bound Brook as part of Operable Unit of the Cornell Dubilier Electronics Superfund Site. I strongly request the United States Environmental Protection Agency (USEPA) to remove all PCB contamination and stop the discharge of groundwater that is actively entering the Bound Brook at the surface.

The Bound Brook flows through the 1,250 acre Dismal Swamp Conservation Area (DSCA) and it is the home to over 175 bird species located in Edison, South Plainfield, and Metuchen. These birds are exposed to the dangerous levels of PCBs in the contaminated soil and water in the Bound Brook and Spring Lake Park. The bird populations in the DSCA will dwindle as some lose their chance at finding mates due to the altered mating songs of the male birds because the effect of high PCB contaminations (The Guardian: "PCB's cause birds to sing a different tune," study conducted by a team of researchers from Cornell University). The birds will end up either dying off or leaving this polluted area to find a safer and cleaner home, where they can continue to reproduce. After this happens, the DSCA will lose one of its best qualities and also one of my favorite.

It would be beneficial for the USEPA to work with the US Fish and Wildlife Service, State Department of Environmental Protection and any other agencies to remove all PCBs, stop the discharge of groundwater, and fully restore this water body so it is no longer a threat to our community and provides a safe and clean habitat for us and the wildlife. As a birdwatcher, I strongly suggest that you consider the issues raised by Edison Wetlands Association (EWA), as they have worked for 25 years to help preserve the DSCA and clean up the Bound Brook so that it is safe for the community, the biota and the inhabiting birds. I want to know that the 175 species of birds are in a safe and clean environment and allow the diverse population to survive for generations to come. As members of this community, we want to know that we, our children, and future generations have a safe home without health risks and hazards caused by PCBs and other contaminants on our land, in our drinking water, and in our air.

Respectfully,

[illegible signature] 424 Hancock St So Plfld NJ

Address:

Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Respectfully,

[signature] - Marvin Callejas

Address:

224 Arlington Ave

Mark Austin
Remedial Project Manager
USEPA Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

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Respectfully,

ANTONI FRANCZAK

Address:
121 KOSCIUSKO AVE